

STIC Search Report

EIC 1700

STIC Database Tracking Number: 147757

TO: Camie Thompson
Location: REM 10D28
Art Unit : 1774 16679
March 22, 2005

Case Serial Number: 10/695655

From: Usha Shrestha
Location: EIC 1700
REMSEN 4B28
Phone: 571/272-3519
usha.shrestha@uspto.gov

Search Notes



STIC Search Results Feedback Form

EIC17000

Questions about the scope or the results of the search? Contact **the EIC searcher or contact:**

**Kathleen Fuller, EIC 1700 Team Leader
571/272-2505 REMSEN 4B28**

Voluntary Results Feedback Form

➤ *I am an examiner in Workgroup:* *Example: 1713*

➤ *Relevant prior art found, search results used as follows:*

- 102 rejection
- 103 rejection
- Cited as being of interest.
- Helped examiner better understand the invention.
- Helped examiner better understand the state of the art in their technology.

Types of relevant prior art found:

- Foreign Patent(s)
- Non-Patent Literature
(journal articles, conference proceedings, new product announcements etc.)

➤ *Relevant prior art not found:*

- Results verified the lack of relevant prior art (helped determine patentability).
- Results were not useful in determining patentability or understanding the invention.

Comments:

Drop off or send completed forms to EIC1700 REMSEN 4B28



SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: Carrie Thompson Examiner #: 19244 Date: 3/13/05
 Art Unit: 1774 Phone Number 30 971221530 Serial Number: 10695655
 Mail Box and Bldg/Room Location: 10 D28 Results Format Preferred (circle): PAPER DISK E-MAIL
REPLIER

If more than one search is submitted, please prioritize searches in order of need.

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc. if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Organic Electroluminescent device
 Inventors (please provide full names): Hsien-Chang Lin; Cai-Hao Kung; Ching-Ching Pai
Tzu-Chia Tsey

Earliest Priority Filing Date: 10/25/2002

For Sequence Searches Only Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

Please do a search on claims 1-19

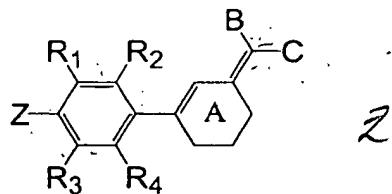
Thanks

<u>STAFF USE ONLY</u>		<u>Type of Search</u>	<u>Vendors and cost where applicable</u>
Searcher: <u>USA</u>		NA Sequence (#)	STN <u>8557.81</u>
Searcher Phone #:		AA Sequence (#)	Dialog
Searcher Location:		Structure (#)	Questel/Orbit
Date Searcher Picked Up:	<u>3/22/05</u>	Bibliographic	Dr. Link
Date Completed:	<u>3/22/05</u>	Litigation	Lexis/Nexis
Searcher Prep & Review Time:	<u>60</u>	Fulltext	Sequence Systems
Clerical Prep Time:	<u>30</u>	Patent Family	WWW/Internet
Online Time:	<u>70</u>	Other	Other (specify)

What is claimed is:

1. An organic electroluminescent device, comprising:
 - a transparent substrate;
 - an anode, disposed on the transparent substrate;
 - 5 an organic electroluminescent layer, disposed on the anode; and
 - a cathode, disposed on the organic electroluminescent layer, wherein the organic electroluminescent layer comprises a compound represented by a following chemical structure (1):

(1)



10

wherein R₁~R₄ are hydrogen, substituted or unsubstituted alkyl group,
substituted or unsubstituted cycloalkyl group, substituted or unsubstituted alkyloxy
group, substituted or unsubstituted alkenyl group, substituted or unsubstituted amino
15 group, substituted or unsubstituted polycyclic aromatic group or a combination thereof;
Z is a electron-donating group; A is substituted or unsubstituted cyclohexene or
naphthalene group; and B and C are electron withdrawing groups.

2. The organic electroluminescent device of claim 1, wherein B and C can be
same or different substitutes.

3. The organic electroluminescent device of claim 1, wherein B and C are comprised of cyano, indandione, benzoimidazole, benzooxazole or benzothiazole substitutes.

4. The organic electroluminescent device of claim 1, wherein the organic electroluminescent layer further comprises an aromatic amino compound, an aromatic diamino compound or an aromatic triamine compound having poly-cyclic ring aromatic substitutes or aromatic hydroxyl substitutes.

5. The organic electroluminescent device of claim 1, wherein the organic electroluminescent layer further comprises a metal complex.

10 6. The organic electroluminescent device of claim 5, wherein the metal complex comprises AlQ3.

7. The organic electroluminescent device of claim 1, wherein the organic electroluminescent layer has a thickness from about 1 nm to about 1 μ m.

15 8. The organic electroluminescent device of claim 1, wherein the Z is -NR₅R₆.

9. The organic electroluminescent device of claim 1, further comprising an electron transporting layer disposed between the cathode and the organic electroluminescent layer.

10. The organic electroluminescent device of claim 9, further comprising an electron injection layer disposed between the cathode and the electron transporting layer.

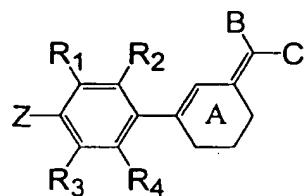
20 11. The organic electroluminescent device of claim 1, further comprising a hole transporting layer disposed between the anode and the organic electroluminescent layer.

✓12. The organic electroluminescent device of claim 11, further comprising a hole injection layer disposed between the anode and the hole transporting layer.

13. An organic electroluminescent compound utilized for an organic electroluminescent device, the organic electroluminescent compound is represented by the following chemical structure (1):

5

(1)



wherein R₁~R₄ are hydrogen, substituted or unsubstituted alkyl group, substituted or unsubstituted cycloalkyl group, substituted or unsubstituted alkyloxy group, substituted or unsubstituted alkenyl group, substituted or unsubstituted amino group, substituted or unsubstituted polycyclic aromatic group or a combination thereof; Z is a electron-donating group; A is substituted or unsubstituted cyclohexene or naphthalene group; and B and C are electron withdrawing groups.

14. The organic electroluminescent compound of claim 13, wherein B and C can 15 be same or different substitutes.

15. The organic electroluminescent compound of claim 13, wherein B and C are comprised of cyano, indandione, benzoimidazole, benzoxazole or benzothiazole substitutes.

16. The organic electroluminescent compound of claim 13, wherein the organic 20 electroluminescent compound further comprises an aromatic amino compound, an

aromatic diamino compound or an aromatic triamine compound having poly-cyclic ring aromatic substitutes or aromatic hydroxyl substitutes.

17. The organic electroluminescent compound of claim 13, wherein the organic electroluminescent compound further comprises a metal complex.

5 18. The organic electroluminescent compound of claim 17, wherein the metal complex comprises AlQ3.

19. The organic electroluminescent compound of claim 13, wherein the Z is -
NR5R6.

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FILE 'LREGISTRY' ENTERED AT 16:22:03 ON 22 MAR 2005
L1 STR

FILE 'REGISTRY' ENTERED AT 16:26:25 ON 22 MAR 2005
L2 0 S L1
L3 8 S L1 FUL
SAV L3 THM655/A

FILE 'HCAPLUS' ENTERED AT 16:36:17 ON 22 MAR 2005
L4 8 S L3
L5 1 S US20040131885/PN
L6 0 S L4 AND L5

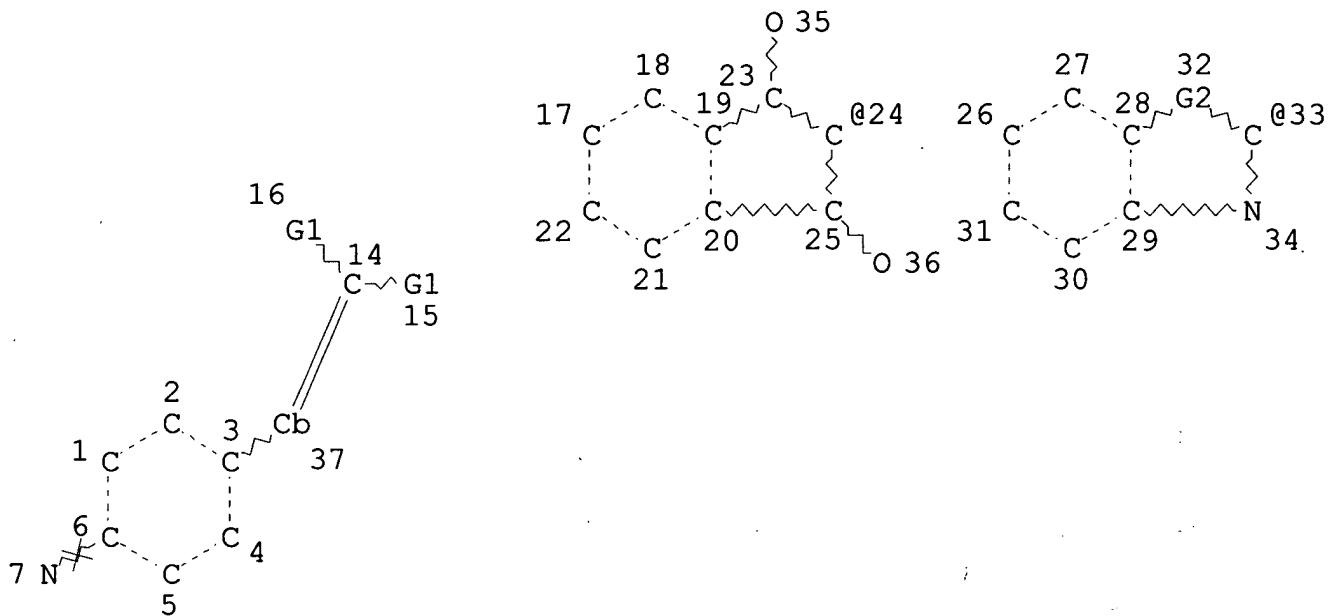
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L7 STR L1
L8 0 S L7
L9 SCR 1035
L10 1 S L7 AND L9
L11 39 S L7 AND L9 FUL

FILE 'HCAPLUS' ENTERED AT 17:01:38 ON 22 MAR 2005
L12 30 S L11
L13 31 S L4 OR L12

FILE 'REGISTRY' ENTERED AT 17:13:38 ON 22 MAR 2005

=> d que 112

L7 STR



VAR G1=CN/24/33

VAR G2=N/O/S

NODE ATTRIBUTES:

NSPEC IS RC AT 7

DEFAULT MLEVEL IS ATOM

GGCAT IS UNS AT 37

DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 31

STEREO ATTRIBUTES: NONE

L9 SCR 1035

L11 39 SEA FILE=REGISTRY SSS FUL L7 AND L9

L12 30 SEA FILE=HCAPLUS ABB=ON PLU=ON L11

=> fil hcap

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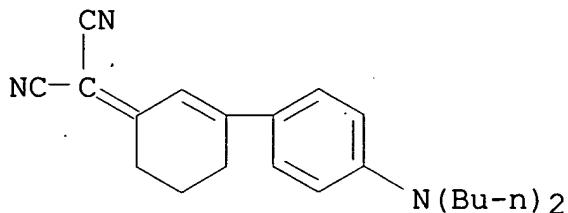
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=> d 113 1-31 ibib abs hitstr hitind

L13 ANSWER 1 OF 31 HCPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2005:6761 HCPLUS
TITLE: Bistriarylamine polymer-based composites for photorefractive applications
AUTHOR(S): Thomas, Jayan; Fuentes-Hernandez, Canek; Yamamoto, Michiharu; Cammack, Kevin; Matsumoto, Kenji; Walker, Gregory A.; Barlow, Stephen; Kippelen, Bernard; Meredith, Gerald; Marder, Seth R.; Peyghambarian, Nasser
CORPORATE SOURCE: Optical Sciences Center, University of Arizona, Tucson, AZ, 85721, USA
SOURCE: Advanced Materials (Weinheim, Germany) (2004), 16(22), 2032-2036
CODEN: ADVMEW; ISSN: 0935-9648
PUBLISHER: Wiley-VCH Verlag GmbH & Co. KGaA
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The development and performance of tetraphenyldiaminobiphenyl-based (TPD) polymer composites with stable video-rate-compatible response times over large exposures is reported. The polymer has a polyacrylate backbone and the well known hole transporting tetraphenyldiaminobiphenyl pendant group attached through an alkoxy linker. The alkoxy spacer is designed to reduce the glass transition temperature and accomplish structural flexibility and orientational freedom of the TPD units in the polymer. The high diffraction efficiency together with an exposure-history independence of the response time described is a significant advance for developing an all-organic photorefractive composite for device applications.
IT **548792-52-5**
(chromophore; bistriarylamine polymer-based composites for photorefractive applications)
RN 548792-52-5 HCPLUS
CN Propanedinitrile, [3-[4-(dibutylamino)phenyl]-2-cyclohexen-1-ylidene]- (9CI) (CA INDEX NAME)



CC 38-3 (Plastics Fabrication and Uses)

Section cross-reference(s): 73

IT 199297-13-7, 7-DCST **548792-52-5**

(chromophore; bis triarylamine polymer-based composites for photorefractive applications)

REFERENCE COUNT: 26 THERE ARE 26 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L13 ANSWER 2 OF 31 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2004:766768 HCAPLUS

DOCUMENT NUMBER: 141:429577

TITLE: Video-rate compatible photorefractive polymers with stable dynamic properties under continuous operation

AUTHOR(S): Fuentes-Hernandez, Canek; Thomas, Jayan; Termine, Roberto; Meredith, Gerald; Peyghambarian, Nasser; Kippelen, Bernard; Barlow, Steve; Walker, Gregory; Marder, Seth R.; Yamamoto, Michiharu; Cammack, Kevin; Matsumoto, Kenji

CORPORATE SOURCE: Optical Sciences Center, University of Arizona, Tucson, AZ, 85721, USA

SOURCE: Applied Physics Letters (2004), 85(11), 1877-1879

PUBLISHER: American Institute of Physics

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The authors report on photorefractive polymer composites that exhibit stable dynamic properties under continuous operation. These materials are based on a bis-triarylamine side-chain polymer matrix with a low ionization potential. The evolution of the response time for exposures up to 4 kJ/cm² was studied and compared with that obtained in poly(N-vinylcarbazole) (PVK) based composites. In the composites, operational stability is combined

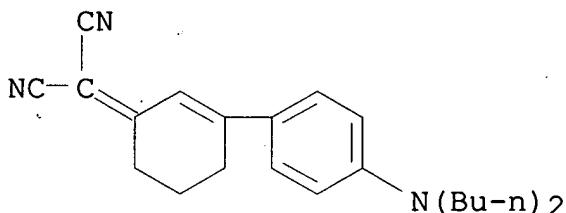
with video-rate compatible dynamics, large dynamic range at moderate fields, and long shelf lifetimes.

IT **548792-52-5**, 3-(N,N-Di-butylaniline-4-yl)-1-dicyanomethylidene-2-cyclohexene

(video-rate compatible photorefractive polymer composite based on polyacrylate containing triarylamine derivative side groups)

RN 548792-52-5 HCPLUS

CN Propanedinitrile, [3-[4-(dibutylamino)phenyl]-2-cyclohexen-1-ylidene]- (9CI) (CA INDEX NAME)



CC 74-8 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

Section cross-reference(s): 73

IT 86-28-2, N-Ethylcarbazole 199297-13-7, 7-DCST

548792-52-5, 3-(N,N-Di-butylaniline-4-yl)-1-dicyanomethylidene-2-cyclohexene

(video-rate compatible photorefractive polymer composite based on polyacrylate containing triarylamine derivative side groups)

REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L13 ANSWER 3 OF 31 HCPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2004:593772 HCPLUS

DOCUMENT NUMBER: 141:285704

TITLE: High-performance photorefractive polymers sensitized by cadmium selenide nanoparticles

AUTHOR(S): Fuentes-Hernandez, Canek; Suh, Duck Jong; Kippelen, Bernard; Marder, Seth R.

CORPORATE SOURCE: Optical Sciences Center, University of Arizona, Tucson, AZ, 85721, USA

SOURCE: Applied Physics Letters (2004), 85(4), 534-536

CODEN: APPLAB; ISSN: 0003-6951

PUBLISHER: American Institute of Physics

DOCUMENT TYPE: Journal

LANGUAGE: English

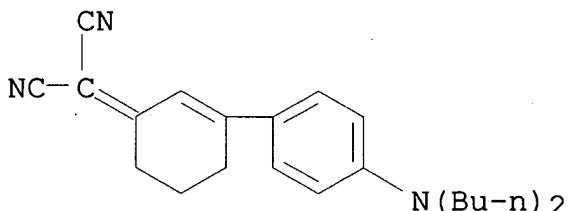
AB The authors report on efficient and fast hybrid photorefractive polymer sensitized with cadmium selenide (CdSe) quantum dots. The surface of the quantum dots was treated with 4-methylbenzenethiol. This surfactant is responsible for efficient photoinduced charge generation in the composite, leading to fast grating build-up times of 100 ms and below. Overmodulation of the diffraction efficiency was observed at an applied field of 60 V/ μ m.

IT **548792-52-5**

(composite; hybrid photorefractive polymer sensitized with cadmium selenide quantum dots using methylbenzenethiol as surfactant for photoinduced charge generation)

RN 548792-52-5 HCAPLUS

CN Propanedinitrile, [3-[4-(dibutylamino)phenyl]-2-cyclohexen-1-ylidene]- (9CI) (CA INDEX NAME)



CC 74-8 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

Section cross-reference(s): 73

IT 106-45-6, 4-Methylbenzenethiol 25067-59-8, Poly(vinylcarbazole)

199297-13-7, 7-DCST **548792-52-5**

(composite; hybrid photorefractive polymer sensitized with cadmium selenide quantum dots using methylbenzenethiol as surfactant for photoinduced charge generation)

REFERENCE COUNT: 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L13 ANSWER 4 OF 31 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2004:550601 HCAPLUS

DOCUMENT NUMBER: 141:113843

TITLE: Organic electroluminescent devices and organic electroluminescent compounds for use in the electroluminescent devices

INVENTOR(S): Lin, Hsien-Chang; Kung, Chih-Hao; Pai, Chung-Cheng; Shieh, Shwu-Ju; Tang, Tzu-Chin

PATENT ASSIGNEE(S): Taiwan

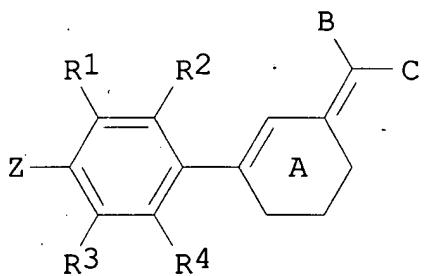
SOURCE: U.S. Pat. Appl. Publ., 16 pp.
 CODEN: USXXCO

DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 2004131885	A1	20040708	US 2003-695655	2003 1027

PRIORITY APPLN. INFO.:	TW 2002-91125124	A
		2002 1025

OTHER SOURCE(S): MARPAT 141:113843
 GI



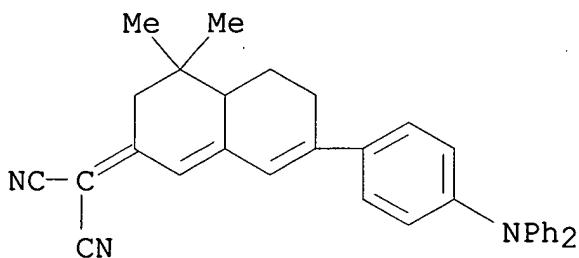
AB Organic electroluminescent compds. and organic electroluminescent devices employing the compds. are disclosed in which the organic electroluminescent compound is represented by the general formula (I) in which R1-4 are hydrogen, substituted or unsubstituted alkyl group, substituted or unsubstituted cycloalkyl group, substituted or unsubstituted alkyloxy group, substituted or unsubstituted alkenyl group, substituted or unsubstituted amino group, substituted or unsubstituted polycyclic aromatic group or their combination; Z is a electron-donating group; A is substituted or unsubstituted cyclohexene or naphthalene group; and B and C are electron withdrawing groups.

IT **717927-78-1P 717927-80-5P**

(organic electroluminescent devices and organic electroluminescent compds. for use in electroluminescent devices)

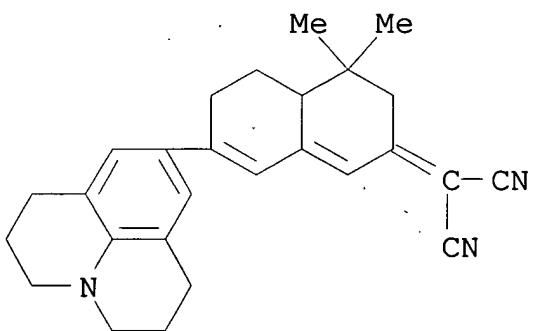
RN 717927-78-1 HCAPLUS

CN Propanedinitrile, [7-[4-(diphenylamino)phenyl]-4,4a,5,6-tetrahydro-4,4-dimethyl-2(3H)-naphthalenylidene]- (9CI) (CA INDEX NAME)



RN 717927-80-5 HCAPLUS

CN Propanedinitrile, [4,4a,5,6-tetrahydro-4,4-dimethyl-7-(2,3,6,7-tetrahydro-1H,5H-benzo[ij]quinolizin-9-yl)-2(3H)-naphthalenylidene]- (9CI) (CA INDEX NAME)



IC ICM H05B033-14

ICS C09K011-06

NCL 428690000; 428917000; 313504000; 313506000; 252301160

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 22, 76

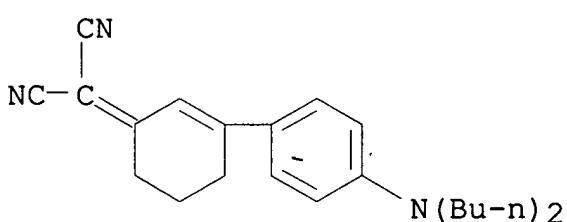
IT **717927-78-1P 717927-80-5P**

(organic electroluminescent devices and organic electroluminescent compds. for use in electroluminescent devices)

L13 ANSWER 5 OF 31 HCAPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 2003:986589 HCAPLUS
 DOCUMENT NUMBER: 141:267439
 TITLE: Efficient photorefractive polymers sensitized
 by CdSe nanoparticles
 AUTHOR(S): Fuentes-Hernandez, Canek; Suh, Duck J.;
 Marder, Seth R.; Kippelen, Bernard
 CORPORATE SOURCE: Optical Sciences Ctr, Univ. of Arizona,
 Tucson, AZ, 85721, USA
 SOURCE: Proceedings of SPIE-The International Society
 for Optical Engineering (2003), 5216(Organic
 Holographic Materials and Applications),
 221-228
 CODEN: PSISDG; ISSN: 0277-786X
 PUBLISHER: SPIE-The International Society for Optical
 Engineering
 DOCUMENT TYPE: Journal
 LANGUAGE: English

AB We report on an efficient and fast hybrid photorefractive polymer sensitized with CdSe quantum dots. The surface of the quantum dots was treated with 4-methylbenzenethiol. This surfactant allows the quantum dots to have an efficient photoinduced charge generation when mixed with a mixture of chromophores. The enhanced photoconductive properties lead to fast grating build-up times of 100 ms and below. In four-wave mixing expts., overmodulation of the diffraction efficiency was observed at an applied field of 60 V/ μ m and gain coeffs. on the order of 20 cm⁻¹ at moderate fields.

IT **548792-52-5**
 (DBDC; efficient photorefractive polymers sensitized by CdSe nanoparticles)
 RN 548792-52-5 HCAPLUS
 CN Propanedinitrile, [3-[4-(dibutylamino)phenyl]-2-cyclohexen-1-ylidene]- (9CI) (CA INDEX NAME)



CC 73-2 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 36

IT **548792-52-5**

(DBDC; efficient photorefractive polymers sensitized by CdSe nanoparticles)

REFERENCE COUNT: 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L13 ANSWER 6 OF 31 HCPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2003:986578 HCPLUS

DOCUMENT NUMBER: 141:284663

TITLE: Photorefractive polymers based on bis-triarylamine side-chain polymers

AUTHOR(S): Fuentes-Hernandez, Canek; Thomas, Jayan; Termine, Roberto; Eralp, Muhsin; Yamamoto, Michiharu; Cammack, Kevin; Matsumoto, Kenji; Barlow, Stephen; Walker, Gregory; Meredith, Gerald; Peyghambarian, Nasser; Kippelen, Bernard; Marder, Seth R.

CORPORATE SOURCE: Optical Sciences Center, University of Arizona, Tucson, AZ, 85721, USA

SOURCE: Proceedings of SPIE-The International Society for Optical Engineering (2003), 5216(Organic Holographic Materials and Applications), 83-90

CODEN: PSISDG; ISSN: 0277-786X

PUBLISHER: SPIE-The International Society for Optical Engineering

DOCUMENT TYPE: Journal

LANGUAGE: English

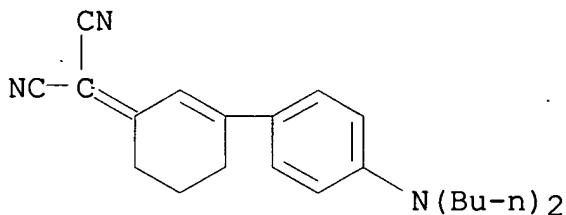
AB We report on the photorefractive properties of two polymer composites that utilize a new bis-triarylamine side-chain polymer matrix. Correctly locating the frontier orbitals of the new transport manifold with respect to the HOMO levels of chromophores, allows stable continuous operation over exposure levels of more than 4 kJ/cm² when samples are elec. biased at 57 V/μm. This operational stability is combined with video-rate compatible grating build-up times and a dynamic range that allows index modulations of 3 x 10⁻³ and gain coeffs. on the order of 100 cm⁻¹ at moderate fields. The thermal stability of one of the composites reported is excellent, showing no signs of phase separation even after one week at 60°C. A comparison with the stability of composites where the new matrix was replaced by PVK is also presented.

IT **548792-52-5**

(DBDC; photorefractive polymers based on bis-triarylamine side-chain polymers)

RN 548792-52-5 HCPLUS

CN Propanedinitrile, [3-[4-(dibutylamino)phenyl]-2-cyclohexen-1-ylidene]- (9CI) (CA INDEX NAME)



CC 73-2 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 36

IT **548792-52-5**

(DBDC; photorefractive polymers based on bis-triarylamine side-chain polymers)

REFERENCE COUNT: 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L13 ANSWER 7 OF 31 HCPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2003:818509 HCPLUS

DOCUMENT NUMBER: 139:308323

TITLE: Polymers and their production for photorefractive compositions

INVENTOR(S): Yamamoto, Michiharu; Marder, Seth R.; Kippelen, Bernard

PATENT ASSIGNEE(S): Nitto Denko Corporation, Japan; Arizona Board of Regents On Behalf of the University of Arizona

SOURCE: PCT Int. Appl., 179 pp.
CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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USHA SHRESTHA REM 4B28

WO 2003085065

A2 20031016

WO 2003-US8541

2003
0319

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 CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI,
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 UZ, VC, VN, YU, ZA, ZM, ZW

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US 6610809

B1 20030826

US 2002-113127

2002
0329US 6653421

B1 20031125

US 2002-113330

2002
0329

PRIORITY APPLN. INFO.:

US 2002-113127

A
2002
0329

US 2002-113330

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2002
0329

OTHER SOURCE(S): MARPAT 139:308323

AB A photorefractive composition comprising a polymer is prepared by living

radical polymerization, wherein: the living radical polymerization is carried

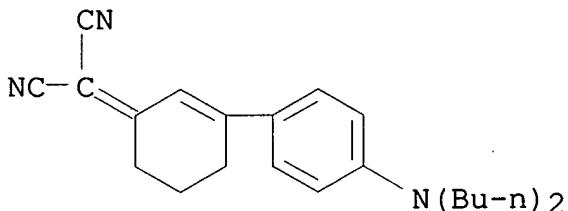
out using a monomer, a polymerization initiator, transition metal catalyst and a ligand capable of reversibly forming a complex with the transition metal catalyst, and the polymer comprises at least one of a repeat unit including a moiety having charge transport ability and a repeat unit including a moiety having non-linear-optical ability. A composition contained 5-[N-ethyl-N-4-formylphenyl]amino-pentyl acrylate homopolymer, 4-homopiperidinobenzylidene malononitrile, and an ethylcarbazole plasticizer.

IT 548792-52-5P 612526-54-2P

(chromophore; polymers and their production for photorefractive compns.)

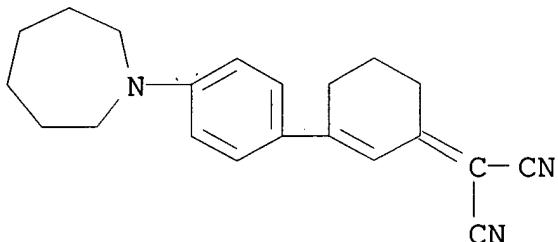
RN 548792-52-5 HCPLUS

CN Propanedinitrile, [3-[4-(dibutylamino)phenyl]-2-cyclohexen-1-ylidene]- (9CI) (CA INDEX NAME)



RN 612526-54-2 HCPLUS

CN Propanedinitrile, [3-[4-(hexahydro-1H-azepin-1-yl)phenyl]-2-cyclohexen-1-ylidene]- (9CI) (CA INDEX NAME)



IC ICM C09K009-00

CC 37-3 (Plastics Manufacture and Processing)
Section cross-reference(s): 73

IT 199297-13-7P **548792-52-5P 612526-54-2P**

(chromophore; polymers and their production for photorefractive compns.)

L13 ANSWER 8 OF 31 HCPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2003:707777 HCPLUS

DOCUMENT NUMBER: 139:237438

TITLE: Sterically stabilized second-order nonlinear optical chromophores with improved stability and devices incorporating the same

INVENTOR(S): Zhang, Cheng; Fetterman, Harold R.; Steier, William; Michael, Joseph

PATENT ASSIGNEE(S): Pacific Wave Industries, Inc., USA

SOURCE: U.S., 29 pp., Cont.-in-part of U.S. 6,361,717.
 CODEN: USXXAM

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 10

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6616865	B1	20030909	US 2000-546930	2000 0411
US 6067186	A	20000523	US 1998-122806	1998 0727
US 6361717	B1	20020326	US 2000-488422	2000 0120
US 6348992	B1	20020219	US 2000-551685	2000 0418
US 6652779	B1	20031125	US 2000-679937	2000 1005
WO 2001077749	A1	20011018	WO 2001-US11613	2001 0409
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
US 2002027220	A1	20020307	US 2001-898625	2001 0703
US 6555027	B2	20030429	US 1998-122806	A2 1998

0727

US 2000-488422

A2

2000
0120

US 2000-546930

A2

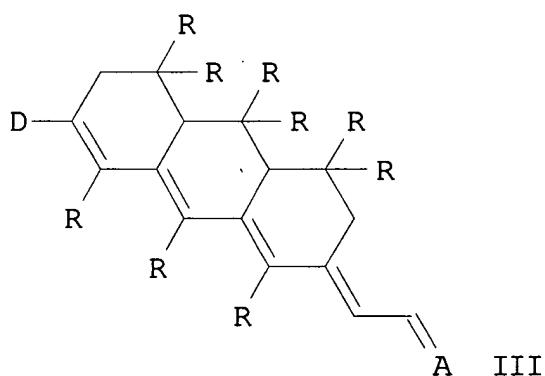
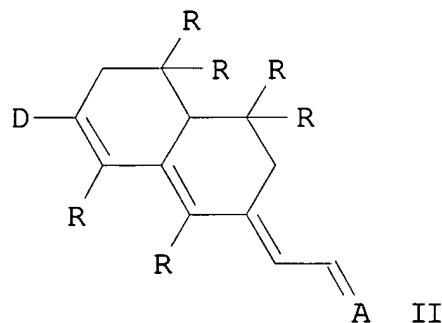
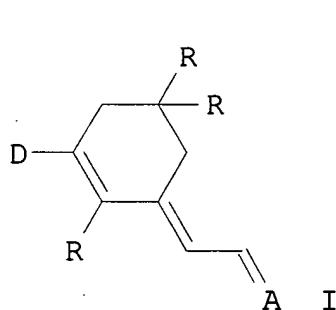
2000
0411

US 2000-551685

A2

2000
0418OTHER SOURCE(S):
GI

MARPAT 139:237438



AB A nonlinear optical device is described comprising an active element including a sterically stabilized 2nd-order chromophore

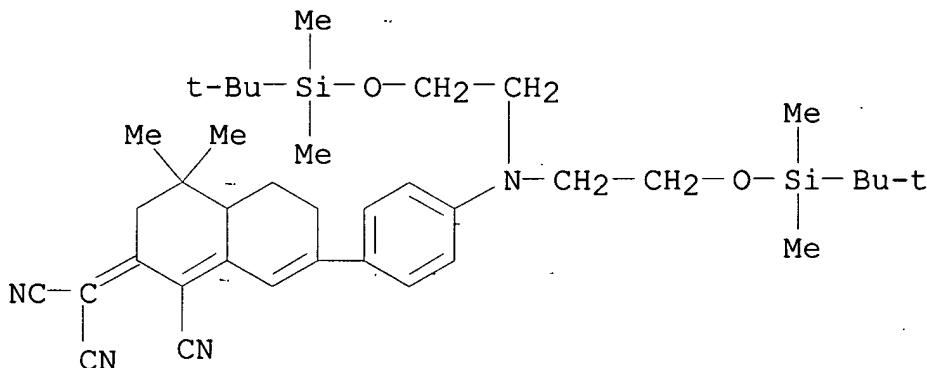
units according to I,II and III wherein D is an electron donor group; wherein A is an electron acceptor group; wherein R = H, F, or any perhalogenated, halogenated or non-halogenated aliphatic or aromatic group with 1-30 carbon atoms functionalized with zero or more of the following functional groups: hydroxy, ether, ester, amino, silyl, and siloxy, and R groups at different positions are not necessarily the same.

IT **367272-45-5P**

(chromophore; sterically stabilized second-order nonlinear optical chromophores with improved stability and devices incorporating them)

RN 367272-45-5 HCPLUS

CN Propanedinitrile, [7-[4-[bis[2-[(1,1-dimethylethyl)dimethylsilyl]oxy]ethyl]amino]phenyl]-1-cyano-4,4a,5,6-tetrahydro-4,4-dimethyl-2(3H)-naphthalenylidene]- (9CI)
(CA INDEX NAME)



IC ICM F21V009-00

ICS G02F001-35

NCL 252582000; 359328000

CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 22

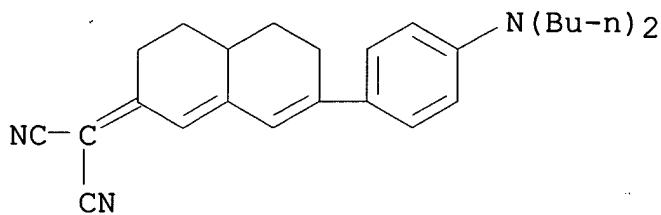
IT 367272-38-6P 367272-40-0P 367272-41-1P **367272-45-5P**

595567-93-4P

(chromophore; sterically stabilized second-order nonlinear optical chromophores with improved stability and devices incorporating them)

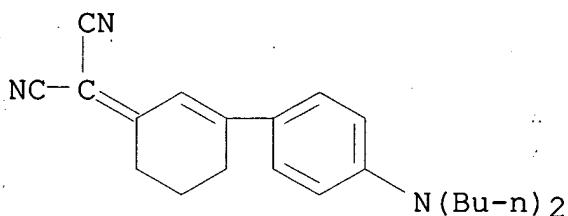
REFERENCE COUNT: 81 THERE ARE 81 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L13 ANSWER 9 OF 31 HCPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2003:216397 HCPLUS
DOCUMENT NUMBER: 139:69793
TITLE: Synthesis and stability studies of conformationally locked 4-(diarylarnino)aryl- and 4-(dialkylarnino)phenyl-substituted second-order nonlinear optical polyene chromophores
AUTHOR(S): Staub, Katrin; Levina, Galina A.; Barlow, Stephen; Kowalczyk, Tony C.; Lackritz, Hilary S.; Barzoukas, Marguerite; Fort, Alain; Marder, Seth R.
CORPORATE SOURCE: Beckman Institute, California Institute of Technology, Pasadena, 91125, USA
SOURCE: Journal of Materials Chemistry (2003), 13(4), 825-833
CODEN: JMACEP; ISSN: 0959-9428
PUBLISHER: Royal Society of Chemistry
DOCUMENT TYPE: Journal
LANGUAGE: English
AB A series of chromophores with high second-order nonlinearities has been synthesized; the chromophores consist of triarylamine or dialkylarylamine donors linked by a conformationally locked polyene bridge to a dicyanomethylidene acceptor. The use of bridges of this type, combined with the replacement of dialkylarylamine with triarylamine donors, leads to high thermal stability without adverse affects on the nonlinear optical properties of the chromophores.
IT 439248-57-4P 548792-52-5P 548792-53-6P
548792-58-1P
(chromophore; synthesis and stability studies of conformationally locked 4-(diarylarnino)aryl- and 4-(dialkylarnino)phenyl-substituted second-order nonlinear optical polyene chromophores)
RN 439248-57-4 HCPLUS
CN Propanedinitrile, [7-[4-(dibutylarnino)phenyl]-4,4a,5,6-tetrahydro-2(3H)-naphthalenylidene]- (9CI) (CA INDEX NAME)



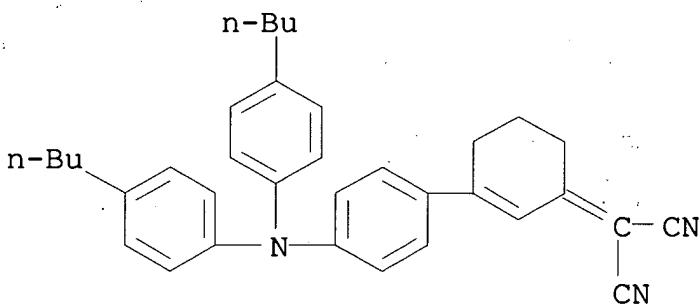
RN 548792-52-5 HCPLUS

CN Propanedinitrile, [3-[4-(dibutylamino)phenyl]-2-cyclohexen-1-ylidene]- (9CI) (CA INDEX NAME)



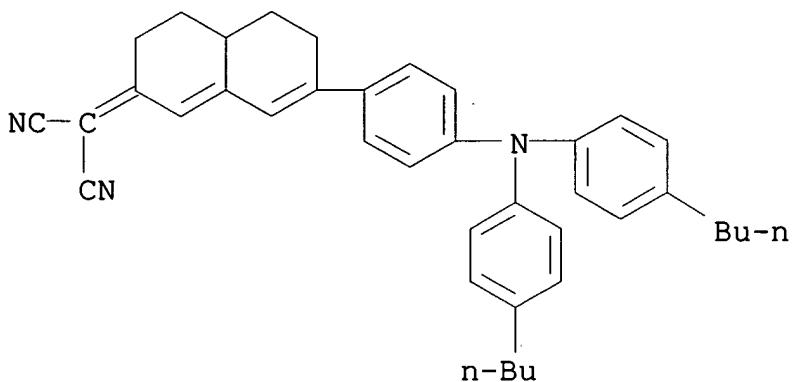
RN 548792-53-6 HCPLUS

CN Propanedinitrile, [3-[4-[bis(4-butylphenyl)amino]phenyl]-2-cyclohexen-1-ylidene]- (9CI) (CA INDEX NAME)



RN 548792-58-1 HCPLUS

CN Propanedinitrile, [7-[4-[bis(4-butylphenyl)amino]phenyl]-4,4a,5,6-tetrahydro-2(3H)-naphthalenylidene]- (9CI) (CA INDEX NAME)

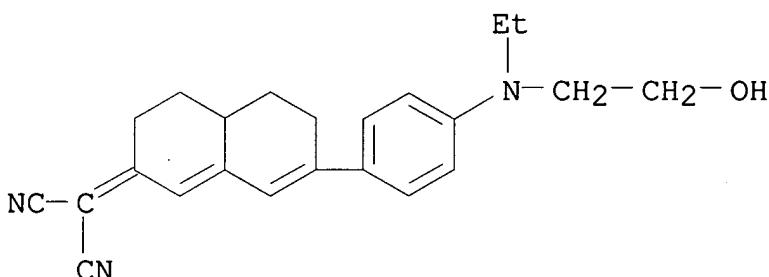


IT 402961-94-8P 548792-54-7P 548792-55-8P
 548792-56-9P 548792-57-0P 548792-59-2P
 548792-60-5P

(chromophore; synthesis and stability studies of conformationally locked 4-(diarylamino)aryl- and 4-(dialkylamino)phenyl-substituted second-order nonlinear optical polyene chromophores)

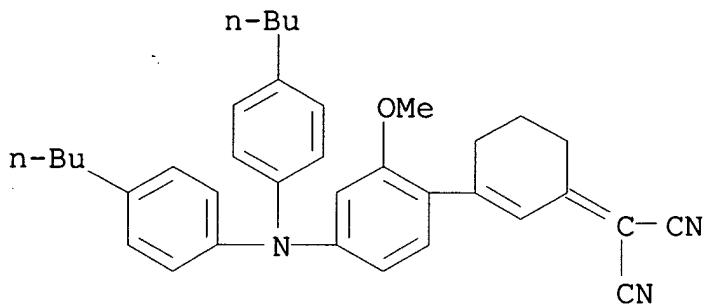
RN 402961-94-8 HCPLUS

CN Propanedinitrile, [7-[4-[ethyl(2-hydroxyethyl)amino]phenyl]-4,4a,5,6-tetrahydro-2(3H)-naphthalenylidene]- (9CI) (CA INDEX NAME)



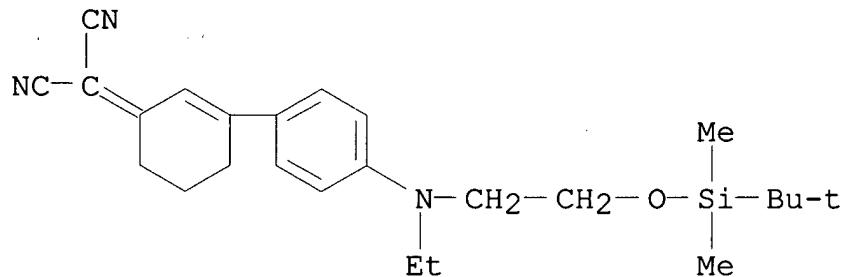
RN 548792-54-7 HCPLUS

CN Propanedinitrile, [3-[4-[bis(4-butylphenyl)amino]-2-methoxyphenyl]-2-cyclohexen-1-ylidene]- (9CI) (CA INDEX NAME)



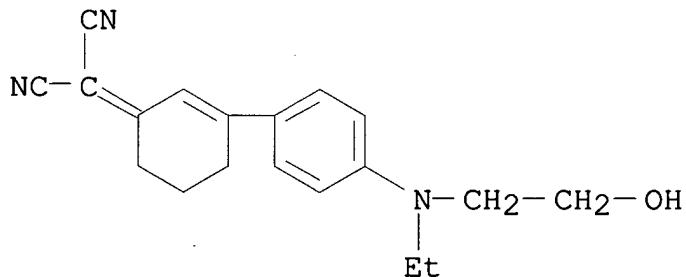
RN 548792-55-8 HCPLUS

CN Propanedinitrile, [3-[4-[[2-[(1,1-dimethylethyl)dimethylsilyl]oxy]ethyl]ethylamino]phenyl]-2-cyclohexen-1-ylidene]- (9CI) (CA INDEX NAME)



RN 548792-56-9 HCPLUS

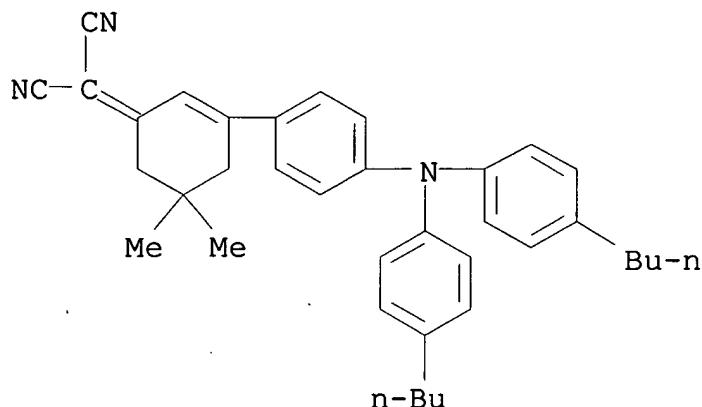
CN Propanedinitrile, [3-[4-[ethyl(2-hydroxyethyl)amino]phenyl]-2-cyclohexen-1-ylidene]- (9CI) (CA INDEX NAME)



RN 548792-57-0 HCPLUS

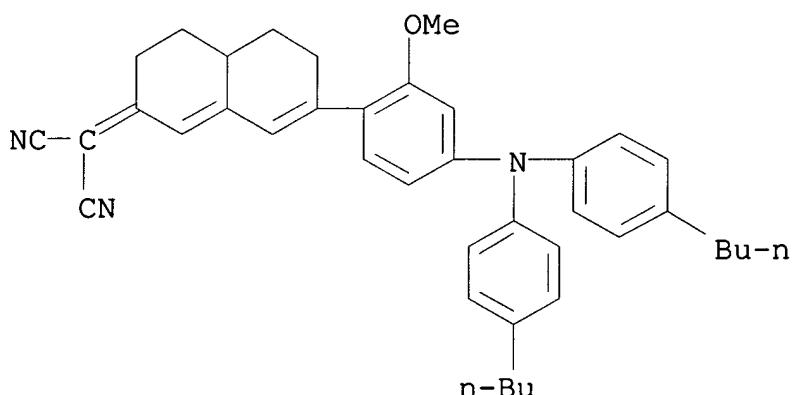
CN Propanedinitrile, [3-[4-[bis(4-butylphenyl)amino]phenyl]-5,5-

dimethyl-2-cyclohexen-1-ylidene]- (9CI) (CA INDEX NAME)



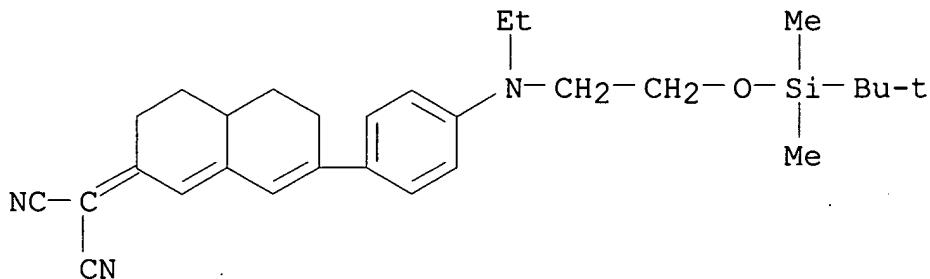
RN 548792-59-2 HCPLUS

CN Propanedinitrile, [7-[4-[bis(4-butylphenyl)amino]-2-methoxyphenyl]-4,4a,5,6-tetrahydro-2(3H)-naphthalenylidene]- (9CI) (CA INDEX NAME)



RN 548792-60-5 HCPLUS

CN Propanedinitrile, [7-[4-[2-[[[1,1-dimethylethyl]dimethylsilyl]oxy]ethyl]ethylamino]phenyl]-4,4a,5,6-tetrahydro-2(3H)-naphthalenylidene]- (9CI) (CA INDEX NAME)



CC 37-2 (Plastics Manufacture and Processing)
 Section cross-reference(s): 25, 73

IT **439248-57-4P 548792-52-5P 548792-53-6P**
548792-58-1P

(chromophore; synthesis and stability studies of conformationally locked 4-(diarylamino)aryl- and 4-(dialkylamino)phenyl-substituted second-order nonlinear optical polyene chromophores)

IT **402961-94-8P 548792-54-7P 548792-55-8P**
548792-56-9P 548792-57-0P 548792-59-2P
548792-60-5P

(chromophore; synthesis and stability studies of conformationally locked 4-(diarylamino)aryl- and 4-(dialkylamino)phenyl-substituted second-order nonlinear optical polyene chromophores)

REFERENCE COUNT: 48 THERE ARE 48 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L13 ANSWER 10 OF 31 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2002:592093 HCAPLUS

DOCUMENT NUMBER: 137:147587

TITLE: Electroluminescent material and device

INVENTOR(S): Okada, Hisashi

PATENT ASSIGNEE(S): Fuji Photo Film Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 24 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2002220585

A2

20020809

JP 2001-16982

2001
0125

PRIORITY APPLN. INFO.

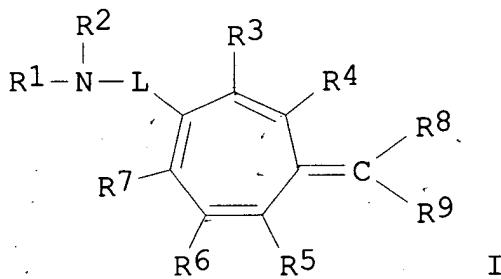
JP 2001-16982

2001
0125

OTHER SOURCE(S):

MARPAT 137:147587

GI

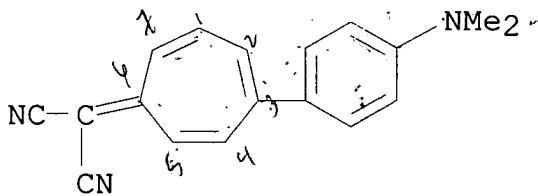


AB The invention refers to an electroluminescent material I [R1,2 = H, aliphatic hydrocarbon, aryl or heterocyclyl; R3-9 = H or substituent; ≥ 1 of R8 or R9 is electron withdrawing group; and L = conjugated linkages].

IT **219831-38-6P**
(electroluminescent material and device)

RN 219831-38-6 HCAPLUS

CN Propanedinitrile, [4-[4-(dimethylamino)phenyl]-2,4,6-cycloheptatrien-1-ylidene]- (9CI) (CA INDEX NAME)



IC ICM C09K011-06

ICS C09K011-06; H05B033-14
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
IT **219831-38-6P**
(electroluminescent material and device)

L13 ANSWER 11 OF 31 HCPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2002:290341 HCPLUS
DOCUMENT NUMBER: 137:64535
TITLE: Donor - acceptor oligoenes with a locked all-trans conformation: synthesis and linear and nonlinear optical properties
AUTHOR(S): Lawrentz, Ulf; Grahn, Walter; Lukaszuk, Katarzyna; Klein, Christopher; Wortmann, Rudiger; Feldner, Andreas; Scherer, Dieter
CORPORATE SOURCE: Institut fur Organische Chemie, Technische Universitat Braunschweig, Braunschweig, 38106, Germany
SOURCE: Chemistry--A European Journal (2002), 8(7), 1573-1590
CODEN: CEUJED; ISSN: 0947-6539
PUBLISHER: Wiley-VCH Verlag GmbH
DOCUMENT TYPE: Journal
LANGUAGE: English
OTHER SOURCE(S): CASREACT 137:64535
AB A general synthetic approach to variously polarized merocyanines and a cyanine with enhanced thermal and (photo)chemical stability by a locked all-trans conformation (derived from a rigidified hexatriene unit and a variety of common donor and acceptor groups) is presented as well as a systematic study of their (non)linear optical properties. Apart from the UV/visible absorption and fluorescence behavior, the ground- and excited-state dipoles, the first-, second-, and third-order mol. polarizabilities were determined by electrooptical absorption measurements and degenerate four-wave mixing (DFWM) techniques in solution. Large values for the second- and third-order polarizability up to $\beta_0 = 461 + 10^{-50}$ CV-2m3 ($1242 + 10^{-30}$ esu) and $|\gamma_{LL}| = 183 + 10^{-60}$ CV-3m4 ($15 + 10^{-34}$ esu) were found. The linear and nonlinear optical properties were related to the ground-state polarization and the resonance structure of the chromophores. In order to reveal the influence of the length of the polymethine chain (number of π electrons within the chromophore), some lower homologs shortened by one C=C (double) bond were also taken into account. The unexpectedly high γ values of some of the merocyanines could not be explained by a two-level model. Mol.

vibrational third-order polarizabilities (calculated from absolute Raman

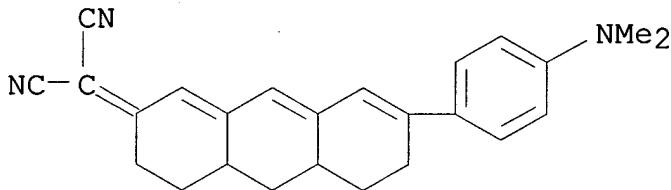
intensities in solution) were qual. correlated to the DFWM results. Furthermore, the dependence of the ^{13}C NMR chemical shifts of the polymethine carbons within the merocyanines upon ground-state polarization was investigated and compared to those within a corresponding cyanine.

IT **280106-19-6P 439248-75-6P**

(blue merocyanine; preparation and linear and nonlinear optical properties of merocyanines)

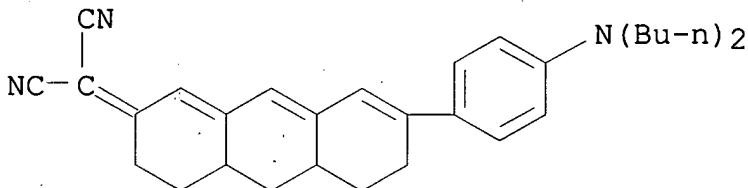
RN 280106-19-6 HCPLUS

CN Propanedinitrile, [7-[4-(dimethylamino)phenyl]-4,4a,5,6,10,10a-hexahydro-2(3H)-anthracenyliidene]- (9CI) (CA INDEX NAME)



RN 439248-75-6 HCPLUS

CN Propanedinitrile, [7-[4-(dibutylamino)phenyl]-4,4a,5,6,10,10a-hexahydro-2(3H)-anthracenyliidene]- (9CI) (CA INDEX NAME)



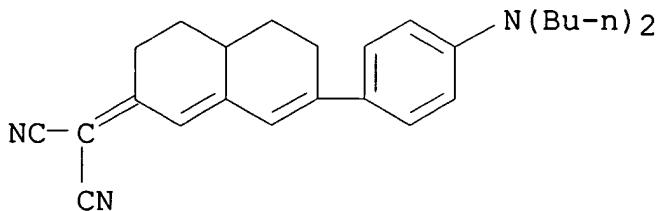
IT **439248-57-4P**

(dark blue merocyanine; preparation and linear and nonlinear optical

properties of merocyanines)

RN 439248-57-4 HCPLUS

CN Propanedinitrile, [7-[4-(dibutylamino)phenyl]-4,4a,5,6-tetrahydro-2(3H)-naphthalenyliidene]- (9CI) (CA INDEX NAME)



CC 41-11 (Dyes, Organic Pigments, Fluorescent Brighteners, and Photographic Sensitizers)
 Section cross-reference(s): 25, 27, 28, 73
 IT **280106-19-6P** 280106-20-9P **439248-75-6P**
 (blue merocyanine; preparation and linear and nonlinear optical properties of merocyanines)
 IT **439248-57-4P**
 (dark blue merocyanine; preparation and linear and nonlinear optical properties of merocyanines)
 REFERENCE COUNT: 78 THERE ARE 78 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L13 ANSWER 12 OF 31 HCPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 2001:907633 HCPLUS
 DOCUMENT NUMBER: 136:238660
 TITLE: Photostability of electro-optic polymers possessing chromophores with efficient amino donors and cyano-containing acceptors
 AUTHOR(S): Galvan-Gonzalez, A.; Stegeman, G. I.; Jen, A. K-Y.; Wu, X.; Canva, M.; Kowalczyk, A. C.; Zhang, X. Q.; Lackritz, H. S.; Marder, S.; Thayumanavan, S.; Levina, G.
 CORPORATE SOURCE: School of Optics and Center for Research and Education in Optics and Lasers, University of Central Florida, Orlando, FL, 32826, USA
 SOURCE: Journal of the Optical Society of America B: Optical Physics (2001), 18(12), 1846-1853
 CODEN: JOBPDE; ISSN: 0740-3224
 PUBLISHER: Optical Society of America
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 AB The photostability of various electrooptic active guest-host polymers, doped with chromophores that possess very efficient cyano-containing acceptors and dialkyamino- or diarylamino-benzenes, and also their extended thiophene analogs as bridging structures,

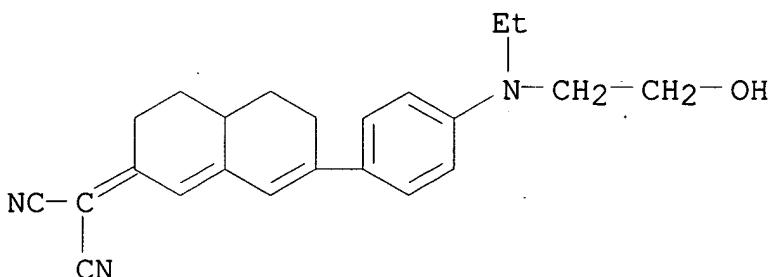
was studied over a broad wavelength range in the near IR and the visible. A variation of over 2 orders of magnitude was found in the probability that an absorbed photon will lead to a photodegraded chromophore. The most photostable chromophore contained a tricyanovinyl acceptor and a diarylaminobenzene bridge unit.

IT 402961-94-8

(photostability of electro-optic polymers possessing chromophores with efficient amino donors and cyano-containing acceptors)

RN 402961-94-8 HCAPLUS

CN Propanedinitrile, [7-[4-[ethyl(2-hydroxyethyl)amino]phenyl]-4,4a,5,6-tetrahydro-2(3H)-naphthalenylidene]- (9CI) (CA INDEX NAME)



CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 22

IT 59223-16-4 63504-26-7 125113-96-4 213737-68-9 220127-20-8
220127-21-9 274696-11-6 402961-93-7 **402961-94-8**

(photostability of electro-optic polymers possessing chromophores with efficient amino donors and cyano-containing acceptors)

REFERENCE COUNT: 26 THERE ARE 26 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L13 ANSWER 13 OF 31 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2001:886235 HCPLUS

DOCUMENT NUMBER: 137:34447

TITLE: Nonlinear optical properties of specific polymethines: Influence of substituents and chain length

AUTHOR(S): Feldner, Andreas; Scherer, Dieter; Welscher,

Markus; Vogtmann, Thomas; Schwoerer, Markus;
 Lawrentz, Ulf; Laue, Thomas; Johannes,
 Hans-Hermann; Grahn, Walter

CORPORATE SOURCE: Lehrstuhl fur Experimentalphysik II and
 Bayreuther Institut fur Makromolekulforschung,
 Universitat Bayreuth, Bayreuth, D-95440,
 Germany

SOURCE: MCLC S&T, Section B: Nonlinear Optics (2000),
 26(1-3), 99-106

CODEN: MCLOEB; ISSN: 1058-7268

PUBLISHER: Gordon & Breach Science Publishers

DOCUMENT TYPE: Journal

LANGUAGE: English

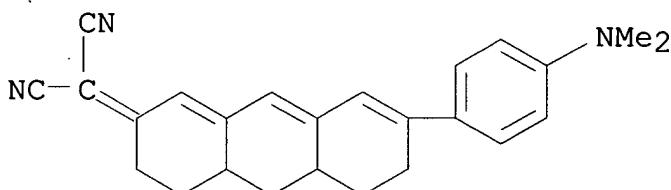
AB The nonlinear optical response of conjugated π electron systems of dye oligomers, including cyanines, rigid merocyanines, and squaraines were studied. The third-order nonlinear optical susceptibility (χ_3) of dye solns. was studied using THG [third harmonic generation], DFWM [degenerate four-wave mixing], and pump-probe expts. The mol. hyperpolarizability was obtained from variations of χ_3 with concentration. The two-photon absorption was determined from two-photon fluorescence data. Time-resolved measurements did not show any broadening of the third-order autocorrelation. The energy level and optical absorption cross-sections of two-photon excited states were also obtained from two-photon fluorescence data.

IT 280106-19-6

(effects of substituent and chain length on nonlinear optical properties of conjugated cyanine and merocyanine and squaraine polymethines)

RN 280106-19-6 HCPLUS

CN Propanedinitrile, [7-[4-(dimethylamino)phenyl]-4a,5,6,10,10a-hexahydro-2(3H)-anthracenylidene]- (9CI) (CA INDEX NAME)



CC 41-6 (Dyes, Organic Pigments, Fluorescent Brighteners, and Photographic Sensitizers)
 Section cross-reference(s): 73

IT 38575-74-5 61575-71-1 61575-72-2 88475-75-6 223272-04-6
 280106-17-4 280106-18-5 **280106-19-6** 280106-20-9
 280106-21-0 280106-22-1 280106-27-6 426233-33-2
 436158-86-0 436158-88-2 436158-90-6 436158-92-8
 436158-94-0 436158-96-2 436158-98-4 436159-00-1
 436159-02-3 436159-04-5 436159-06-7 436159-08-9
 436159-10-3 436159-12-5 437609-19-3 437609-20-6
 437609-21-7

(effects of substituent and chain length on nonlinear optical properties of conjugated cyanine and merocyanine and squaraine polymethines)

REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L13 ANSWER 14 OF 31 HCPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 2001:853894 HCPLUS
 DOCUMENT NUMBER: 136:207206
 TITLE: Chain flexibility and nonlinear optical properties of conjugated molecules
 AUTHOR(S): Del Zoppo, M.; Sugliani, S.; Zerbi, G.
 CORPORATE SOURCE: Dipartimento di Chimica Industriale e Ingegneria Chimica, Politecnico di Milano, Milan, 20133, Italy
 SOURCE: Synthetic Metals (2001), 124(1), 167-169
 CODEN: SYMEDZ; ISSN: 0379-6779
 PUBLISHER: Elsevier Science S.A.

DOCUMENT TYPE: Journal

LANGUAGE: English

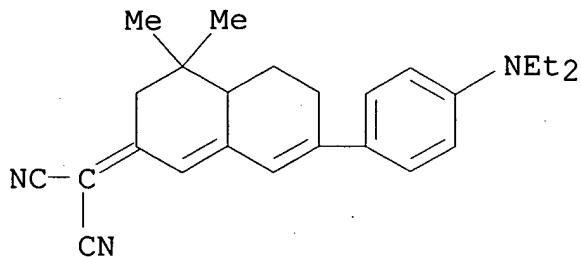
AB The influence of conformational disorder on the nonlinear optical behavior of push-pull polyenes, is discussed with the help of vibrational spectroscopy. Vibrational mol. hyperpolarizabilities have been evaluated according to the vibrational method.

IT **213620-04-3 213620-08-7**

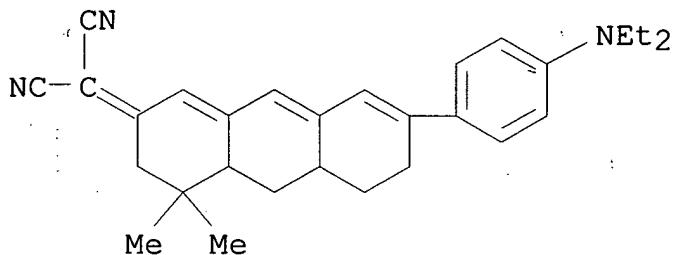
(chain flexibility and nonlinear optical properties of conjugated mols.)

RN 213620-04-3 HCPLUS

CN Propanedinitrile, [7-[4-(diethylamino)phenyl]-4,4a,5,6-tetrahydro-4,4-dimethyl-2(3H)-naphthalenylidene]- (9CI) (CA INDEX NAME)



RN 213620-08-7 HCAPLUS
 CN Propanedinitrile, [7-[4-(diethylamino)phenyl]-4,4a,5,6,10,10a-hexahydro-4,4-dimethyl-2(3H)-anthracenylidene]- (9CI) (CA INDEX NAME)



CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
 Section cross-reference(s): 22
 IT 182246-77-1 182246-78-2 **213620-04-3**
213620-08-7 213620-09-8 228265-19-8
 (chain flexibility and nonlinear optical properties of conjugated mols.)
 REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L13 ANSWER 15 OF 31 HCAPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 2001:763334 HCAPLUS
 DOCUMENT NUMBER: 135:310664
 TITLE: Sterically stabilized second-order nonlinear optical chromophores
 INVENTOR(S): Zhang, Cheng; Fetterman, Harold R.; Steier, William; Michael, Joseph

PATENT ASSIGNEE(S): Pacific Wave Industries, Inc., USA
 SOURCE: PCT Int. Appl., 50 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 10
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001077749	A1	20011018	WO 2001-US11613	2001 0409
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
US 6616865	B1	20030909	US 2000-546930	2000 0411
PRIORITY APPLN. INFO.:			US 2000-546930	A 2000 0411
			US 1998-122806	A2 1998 0727
			US 2000-488422	A2 2000 0120

OTHER SOURCE(S): MARPAT 135:310664

AB Nonlinear optical devices comprising an active element formed from a chromophore including an electron donor group, an electron acceptor group, and a π -conjugate fused-ring bridge structure between the electron donor group and the electron acceptor group

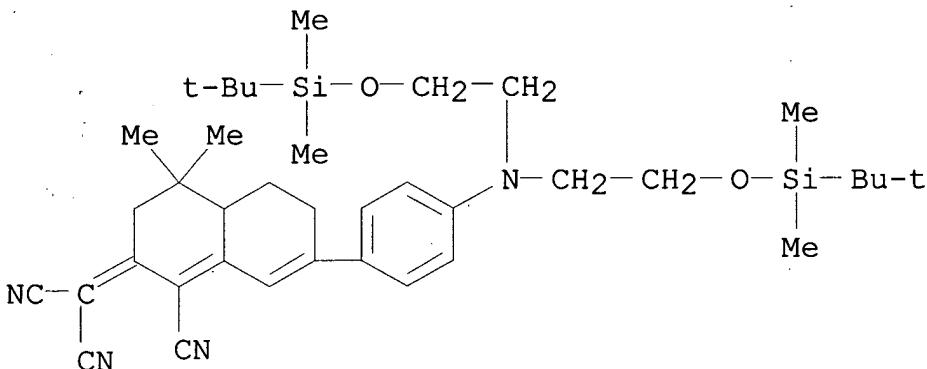
are described in which the electron donor group and/or the electron acceptor group (are) is directly connected to the bridge structure or 1 of the electron donor group and the electron acceptor group is connected to the bridge structure with a conjugated diene while the other is directly connected.

IT **367272-45-5P**

(nonlinear optical devices using sterically stabilized second-order nonlinear optical chromophores)

RN 367272-45-5 HCPLUS

CN Propanedinitrile, [7-[4-[bis[2-[(1,1-dimethylethyl)dimethylsilyl]oxy]ethyl]amino]phenyl]-1-cyano-4,4a,5,6-tetrahydro-4,4-dimethyl-2(3H)-naphthalenylidene]- (9CI)
(CA INDEX NAME)



IC ICM G02F001-35
ICS F21V009-00

CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 24

IT 367272-34-2P 367272-38-6P 367272-40-0P 367272-41-1P

367272-45-5P

(nonlinear optical devices using sterically stabilized second-order nonlinear optical chromophores)

REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L13 ANSWER 16 OF 31 HCPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2001:610703 HCPLUS

DOCUMENT NUMBER: 135:378137

TITLE: Chain flexibility and nonlinear optical

properties in polyenes within a two-state
(VB-CT) model

AUTHOR(S): Sugliani, S.; Del Zoppo, M.; Zerbi, G.; Shu, C.-F.

CORPORATE SOURCE: Politecnico di Milano, Dipartimento di Chimica Industriale e Ingegneria Chimica, Milan, 20133, Italy

SOURCE: Chemical Physics (2001), 271(1-2), 127-136
CODEN: CMPHC2; ISSN: 0301-0104

PUBLISHER: Elsevier Science B.V.

DOCUMENT TYPE: Journal

LANGUAGE: English

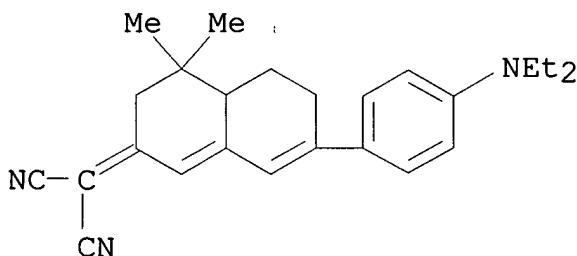
AB A simple 2-state model justifies the dependence of 1st-order hyperpolarizabilities (β) of push-pull polyenes on conformational disorder. Particular relevance is given to the calcn. of the vibrational properties (i.e. force consts., IR and Raman intensities) which are used for the evaluation of the vibrational contribution to static mol. hyperpolarizabilities. The theor. predictions are compared with exptl. measurements of the quantities of interest on suitable mols. purposely synthesized.

IT **213620-04-3 213620-08-7**

(chain flexibility and nonlinear optical properties within two-state valence-bond charge-transfer model)

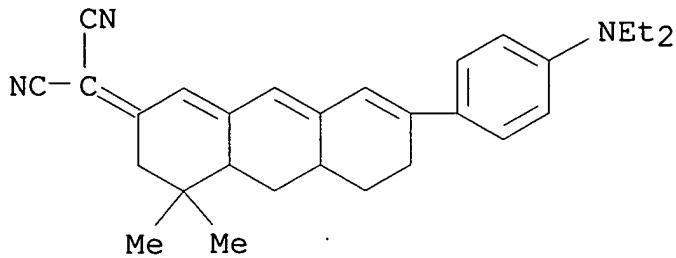
RN 213620-04-3 HCPLUS

CN Propanedinitrile, [7-[4-(diethylamino)phenyl]-4,4a,5,6-tetrahydro-4,4-dimethyl-2(3H)-naphthalenylidene]- (9CI) (CA INDEX NAME)



RN 213620-08-7 HCPLUS

CN Propanedinitrile, [7-[4-(diethylamino)phenyl]-4,4a,5,6,10,10a-hexahydro-4,4-dimethyl-2(3H)-anthracenylidene]- (9CI) (CA INDEX NAME)



CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 22

IT 1211-40-1, 4-Amino-4'-nitro-1,1'-biphenyl 168561-00-0
 200636-12-0, all-trans-1,1-Dicyano-6-dimethylamino-1,3,5-hexatriene **213620-04-3** **213620-08-7**
 245421-71-0 374553-79-4 374553-80-7 374553-81-8
 374553-82-9

(chain flexibility and nonlinear optical properties within two-state valence-bond charge-transfer model)

REFERENCE COUNT: 33 THERE ARE 33 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L13 ANSWER 17 OF 31 HCPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2000:545304 HCPLUS

DOCUMENT NUMBER: 134:131454

TITLE: Synthesis of pyranothiazoles and spiro-thiazolidinediones

AUTHOR(S): Rao, V. S.; Gupta, S. V. S. Arun Kumar; Giridhar, P.; Ganesh, N. Jai; Reddy, B. S.

CORPORATE SOURCE: Chemistry Group, Birla Institute of Technology and Science, Pilani, India

SOURCE: Indian Journal of Heterocyclic Chemistry (2000), 9(4), 247-250

CODEN: IJCHEI; ISSN: 0971-1627

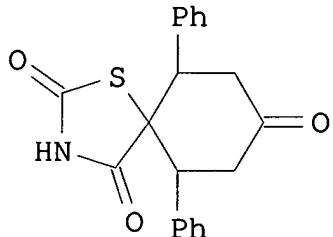
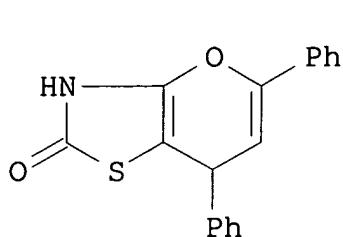
PUBLISHER: Prof. R. S. Varma

DOCUMENT TYPE: Journal

LANGUAGE: English

OTHER SOURCE(S): CASREACT 134:131454

GI



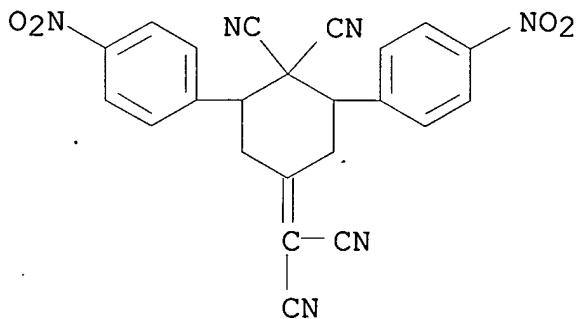
AB Pyranothiazoles, e.g., I, and spiro-thiazolidinediones, e.g., II, were synthesized by reaction of 2,4-thiazolidinedione with chalcones and α -cyano- α , β -unsatd. nitriles in the presence of mild/strong bases. Structural assignments of the new compds. are based on anal. and spectral data.

IT **321914-12-9**

(cyclocondensation reaction with 2,4-thiazolidinedione)

RN 321914-12-9 HCPLUS

CN 1,1-Cyclohexanedicarbonitrile, 4-(dicyanomethylene)-2,6-bis(4-nitrophenyl)- (9CI) (CA INDEX NAME)



CC 28-7 (Heterocyclic Compounds (More Than One Hetero Atom))

IT 94-41-7 538-58-9 614-48-2 621-21-6 621-98-7 956-04-7
 959-33-1 1867-38-5 2051-07-2 2700-22-3 2826-25-7
 2826-26-8 2972-85-2 3111-61-3 4224-87-7 4224-96-8
 5332-98-9 5447-87-0 6552-71-2 18278-29-0 19672-59-4
 19672-63-0 25288-75-9 26088-78-8 37620-37-4 38552-39-5
 54006-55-2 62221-11-8 66896-93-3 321914-06-1 321914-07-2
 321914-08-3 321914-09-4 321914-10-7 321914-11-8
321914-12-9 321914-13-0 321914-14-1

(cyclocondensation reaction with 2,4-thiazolidinedione)

REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE

FOR THIS RECORD. ALL CITATIONS AVAILABLE
IN THE RE FORMAT

L13 ANSWER 18 OF 31 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2000:346335 HCAPLUS

DOCUMENT NUMBER: 133:105868

TITLE:

Polyquinolines: multifunctional polymers for
electro-optic and light-emitting applications

AUTHOR(S): Jen, Alex K.-Y.; Ma, Hong

CORPORATE SOURCE: Department of Chemistry, Northeastern
University, Boston, MA, 02115, USA

SOURCE: Materials Research Society Symposium
Proceedings (2000), 558(Flat-Panel Displays
and Sensors--Principles, Materials and
Processes), 469-480

CODEN: MRSPDH; ISSN: 0272-9172

PUBLISHER: Materials Research Society

DOCUMENT TYPE: Journal

LANGUAGE: English

AB A versatile, and generally applicable modular approach for making second-order nonlinear optical (NLO) side-chain aromatic polyquinolines has been developed. This approach emphasizes the ease of incorporating NLO chromophores onto the pendent Ph moieties of parent polyquinolines at the final stage via mild Mitsunobu reaction. This method provides the synthesis of polyquinolines with a broad variation of the polymer backbones and great flexibility in the selection of NLO chromophores. These side-chain NLO polyquinolines demonstrate high electro-optic (E-O) activity (up to 35 pm/V at 830 nm and 22 pm/V at 1300 nm, resp.) and a good combination of thermal, optical, elec. and mech. properties. Comparatively, two new electroluminescent (EL) polyquinolines have been prepared via the Friedlander condensation and nucleophilic reaction. The resulting polymers contain a bipolar property with both an efficient hole-transporting moiety, tetraphenyldiaminobiphenyl (TPD), and an electron affinitive light-emitting moiety, bis-quinoline. In addition, they possess high thermal stability, excellent electrochem. reversibility, good thin film-forming ability, and bright light-emitting property. Elec. characterization of two-layer diode devices based on the configurations of ITO/CuPc/TPD-PQ or TPD-PQE/Al showed-excellent electroluminescence performance (a rectification ratio greater than 105 and a low turn-on voltage of less than 4 V).

IT 208345-48-6DP, polyquinoline ether derivs.

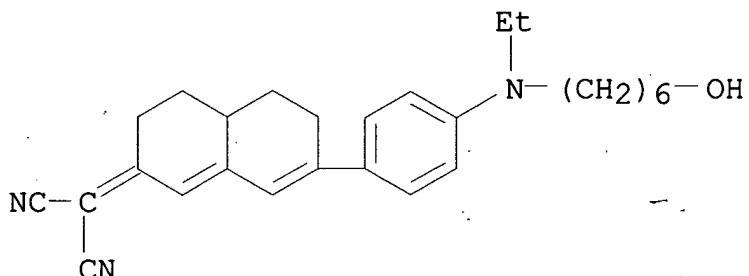
244023-21-0DP, polyquinoline ether derivs.

(preparation and characterization and applications of

multifunctional polyquinolines for electrooptic and light-emitting devices)

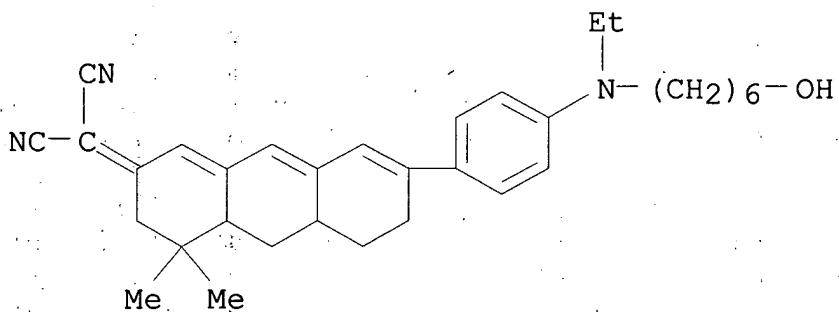
RN 208345-48-6 HCPLUS

CN Propanedinitrile, [7-[4-[ethyl(6-hydroxyhexyl)amino]phenyl]-4,4a,5,6-tetrahydro-2(3H)-naphthalenylidene]- (9CI) (CA INDEX NAME)



RN 244023-21-0 HCPLUS

CN Propanedinitrile, [7-[4-[ethyl(6-hydroxyhexyl)amino]phenyl]-4,4a,5,6,10,10a-hexahydro-4,4-dimethyl-2(3H)-anthracenylidene]- (9CI) (CA INDEX NAME)



CC 38-3 (Plastics Fabrication and Uses)

Section cross-reference(s): 73

IT **208345-48-6DP**, polyquinoline ether derivs.

208345-49-7DP, polyquinoline ether derivs. 213814-56-3P

213814-63-2P 213814-67-6P 213814-71-2P 244023-17-4DP,

polyquinoline ether derivs. 244023-18-5DP, polyquinoline ether derivs. 244023-19-6DP, polyquinoline ether derivs.

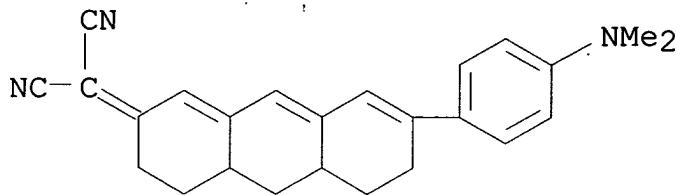
244023-20-9DP, polyquinoline ether derivs. **244023-21-0DP**, polyquinoline ether derivs.

(preparation and characterization and applications of

multifunctional polyquinolines for electrooptic and light-emitting devices)

REFERENCE COUNT: 29 THERE ARE 29 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L13 ANSWER 19 OF 31 HCPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2000:36388 HCPLUS
DOCUMENT NUMBER: 133:75324
TITLE: Rigidized merocyanines: synthesis and linear and nonlinear optical properties
AUTHOR(S): Grahn, Walter; Lawrentz, Ulf; Lukaszuk, Katarzyna; Wortmann, Ruediger; Feldner, Andreas; Scherer, Dieter; Schwoerer, Markus; Bendig, Juergen; Helm, Siegrun; Dix, Ina; Jones, Peter George
CORPORATE SOURCE: Institute for Organic Chemistry, Tech. Univ. Braunschweig, Braunschweig, Germany
SOURCE: Proceedings of SPIE-The International Society for Optical Engineering (1999), 3796(Organic Nonlinear Optical Materials), 247-256
CODEN: PSISDG; ISSN: 0277-786X
PUBLISHER: SPIE-The International Society for Optical Engineering
DOCUMENT TYPE: Journal
LANGUAGE: English
AB We have designed and synthesized donor/acceptor-substituted hexatrienes in which the configuration is locked by a hexahydroanthracene frame. Donors and acceptors of varying strength were introduced. In order to assess the potential of our merocyanines for NLO and photorefractive (PR) applications, we have measured their linear and nonlinear optical properties and determined the NLO and PR figures-of-merit (FOMs), resp. One merocyanine exhibits a very large Kerr FOM. The thermal stability of the new merocyanines is sufficiently high for photonic applications. In order to investigate and to correlate the bond length alternation of our oligoenes with linear and nonlinear optical properties we have carried out X-ray structure detns.
IT 280106-19-6P
(dye; synthesis and linear and nonlinear optical properties of rigidized merocyanines)
RN 280106-19-6 HCPLUS
CN Propanedinitrile, [7-[4-(dimethylamino)phenyl]-4,4a,5,6,10,10a-hexahydro-2(3H)-anthracenylidene]- (9CI) (CA INDEX NAME)



CC 41-11 (Dyes, Organic Pigments, Fluorescent Brighteners, and Photographic Sensitizers)

Section cross-reference(s): 73, 75

IT **280106-19-6P** 280106-20-9P 280106-21-0P 280106-22-1P

280106-25-4P 280106-27-6P

(dye; synthesis and linear and nonlinear optical properties of rigidized merocyanines)

REFERENCE COUNT: 21 THERE ARE 21 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L13 ANSWER 20 OF 31 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2000:36383 HCAPLUS

DOCUMENT NUMBER: 133:75323

TITLE: Systematic study on the optimization of the first hyperpolarizabilities of methine dyes

Ritzel, Christian; Schmaelzlin, Elmar;

Braeuchle, Christoph R.; Meerholz, Klaus;

Roessler, Alexander; Ernst, Christian;

Wichern, Juergen; Boldt, Peter

Institut fuer Physikalische Chemie, Univ.

Muenchen, Munich, Germany

SOURCE: Proceedings of SPIE-The International Society for Optical Engineering (1999), 3796(Organic Nonlinear Optical Materials), 202-208

CODEN: PSISDG; ISSN: 0277-786X

PUBLISHER: SPIE-The International Society for Optical Engineering

DOCUMENT TYPE: Journal

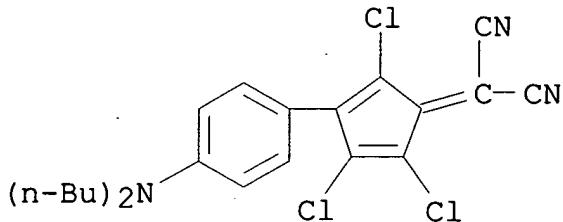
LANGUAGE: English

AB Methine dyes are frequently used as nonlinear optical (NLO) chromophores. In the case of our dyes, both the substitution of the methine proton by a cyano group and the substitution of the methine carbon by nitrogen lead to a strong bathochromic shift. In this work the influence of these modifications to the first hyperpolarizability is systematically investigated.

IT **280129-91-1 280129-92-2**(substituent and structure effects on NLO first
hyperpolarizabilities of methine dyes)

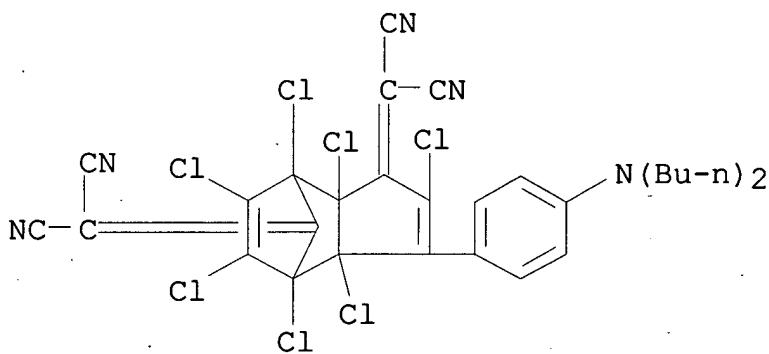
RN 280129-91-1 HCPLUS

CN Propanedinitrile, [2,3,5-trichloro-4-[4-(dibutylamino)phenyl]-2,4-cyclopentadien-1-ylidene]- (9CI) (CA INDEX NAME)



RN 280129-92-2 HCPLUS

CN Propanedinitrile, 2,2'-[2,3a,4,5,6,7,7a-heptachloro-3-[4-(dibutylamino)phenyl]-3a,4,7,7a-tetrahydro-4,7-methano-1H-indene-1,8-diylidene]bis- (9CI) (CA INDEX NAME)

CC 41-11 (Dyes, Organic Pigments, Fluorescent Brighteners, and
Photographic Sensitizers)

Section cross-reference(s): 73

IT 63504-26-7 95640-47-4 109347-61-7 109347-67-3 122533-96-4
124995-13-7 130779-12-3 130779-15-6 130779-17-8
130779-26-9 130779-27-0 195823-20-2 243991-38-0
263556-44-1 280129-85-3 280129-86-4 280129-87-5
280129-88-6 280129-89-7 280129-90-0 **280129-91-1****280129-92-2**

(substituent and structure effects on NLO first

hyperpolarizabilities of methine dyes)

REFERENCE COUNT: 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L13 ANSWER 21 OF 31 HCPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1999:436764 HCPLUS

DOCUMENT NUMBER: 131:229362

TITLE: A Convenient Modular Approach of Functionalizing Aromatic Polyquinolines for Electrooptic Devices

AUTHOR(S): Ma, Hong; Jen, Alex K.-Y.; Wu, Jianyao; Wu, Xiaoming; Liu, Sen; Shu, Ching-Fong; Dalton, Larry R.; Marder, Seth R.; Thayumanavan, Sankaran

CORPORATE SOURCE: Department of Chemistry, Northeastern University, Boston, MA, 02115, USA

SOURCE: Chemistry of Materials (1999), 11(8), 2218-2225

CODEN: CMATEX; ISSN: 0897-4756

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

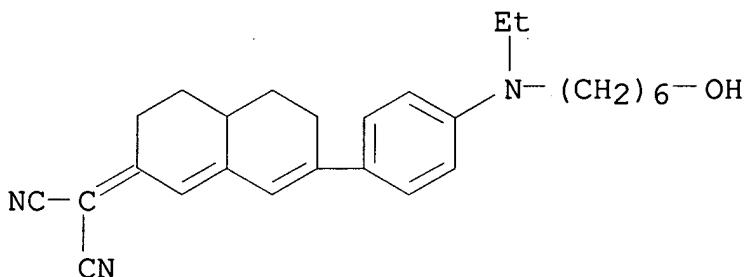
AB A versatile and generally applicable synthetic method for making second-order nonlinear optical (NLO) side-chain aromatic polyquinolines has been developed. This approach emphasizes the ease of incorporating NLO chromophores onto the pendent Ph moieties of parent polyquinolines at the final stage via a mild Mitsunobu reaction, which provides the synthesis of NLO polyquinolines with a broad variation of polymer backbones and great flexibility in the selection of chromophores. The synthesized NLO side-chain polyquinolines possess high glass transition temperature ($T_g > 200 ^\circ\text{C}$), good processability, and excellent thermal stability. The promising results of electrooptic (EO) activity (up to 35 pm/V at 830 nm and 22 pm/V at 1300 nm), optical loss (1.5-2.5 dB/cm), and long-term stability of the poling-induced polar order (r_{33} values retained >90% of their original values at 85 °C for more than 1000 h) have demonstrated the advantages of this design approach. The excellent combination of these properties in the resulting polymers have also provided a great promise in the development of EO devices.

IT 208345-48-6DP, reaction products with polyquinolines

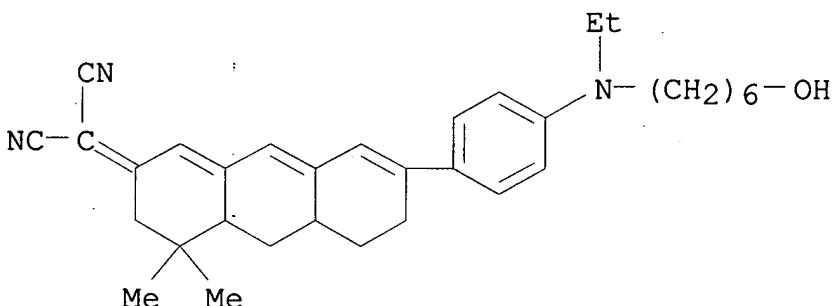
244023-21-0DP, reaction products with polyquinolines

(preparation of nonlinear optical materials by functionalizing

RN hydroxyphenyl group-containing polyquinolines with chromophores)
 208345-48-6 HCPLUS
 CN Propanedinitrile, [7-[4-[ethyl(6-hydroxyhexyl)amino]phenyl]-
 4,4a,5,6-tetrahydro-2(3H)-naphthalenylidene]- (9CI) (CA INDEX
 NAME)



RN 244023-21-0 HCPLUS
 CN Propanedinitrile, [7-[4-[ethyl(6-hydroxyhexyl)amino]phenyl]-
 4,4a,5,6,10,10a-hexahydro-4,4-dimethyl-2(3H)-anthracenylidene]-
 (9CI) (CA INDEX NAME)



CC 37-3 (Plastics Manufacture and Processing)
 Section cross-reference(s): 73, 76
 IT 208345-47-5DP, hydroxy derivs., reaction products with
 chromophores **208345-48-6DP**, reaction products with
 polyquinolines 208345-49-7DP, reaction products with
 polyquinolines 208345-50-0DP, hydroxy derivs., reaction products
 with chromophores 208345-51-1DP, hydroxy derivs., reaction
 products with chromophores 244023-17-4DP, reaction products with
 polyquinolines 244023-18-5DP, reaction products with
 polyquinolines 244023-19-6DP, reaction products with
 polyquinolines 244023-20-9DP, reaction products with

polyquinolines **244023-21-0DP**, reaction products with polyquinolines

(preparation of nonlinear optical materials by functionalizing hydroxyphenyl group-containing polyquinolines with chromophores)

REFERENCE COUNT: 47 THERE ARE 47 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L13 ANSWER 22 OF 31 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1999:305599 HCAPLUS

DOCUMENT NUMBER: 131:73415

TITLE: Synthesis and structure of NLO-active 8,8-dicyano-3-[4-(dimethylamino)phenyl]heptafulvene

AUTHOR(S): Otani, Hiroyuki; Mizuguchi, Jin

CORPORATE SOURCE: Department of Environmental Science, Faculty of Education and Human Sciences, Yokohama

National University, Yokohama, 240-8501, Japan

Chemistry Letters (1999), (5), 389-390

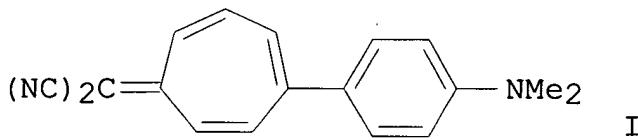
CODEN: CMLTAG; ISSN: 0366-7022

PUBLISHER: Chemical Society of Japan

DOCUMENT TYPE: Journal

LANGUAGE: English

GI



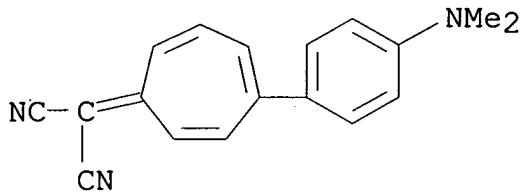
AB Some new 8,8-dicyanophenylheptafulvenes have been synthesized, among which the title compound (I) is found to crystallize in the polar space group of P1 and show nonlinear optical characteristics.

IT **219831-38-6P**

(preparation and nonlinear optical characteristics of)

RN 219831-38-6 HCAPLUS

CN Propanedinitrile, [4-[4-(dimethylamino)phenyl]-2,4,6-cycloheptatrien-1-ylidene]- (9CI) (CA INDEX NAME)



CC 25-20 (Benzene, Its Derivatives, and Condensed Benzenoid Compounds)

Section cross-reference(s): 22

IT **219831-38-6P**

(preparation and nonlinear optical characteristics of)

REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L13 ANSWER 23 OF 31 HCPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1999:37503 HCPLUS

DOCUMENT NUMBER: 130:188965

TITLE: A novel NLO-active, non-benzenoid compound based on 8,8-dicyano-3-(4'-dimethylamino)-phenylheptafulvene: - crystal and electronic structures -

AUTHOR(S): Mizuguchi, Jin; Suzuki, Takao; Matsumoto, Shinya; Otani, Hiroyuki

CORPORATE SOURCE: Department of Applied Physics, Faculty of Engineering, Yokohama National University, Yokohama, 240-8501, Japan

SOURCE: Molecular Crystals and Liquid Crystals Science and Technology, Section A: Molecular Crystals and Liquid Crystals (1998), 322, 55-62

CODEN: MCLCE9; ISSN: 1058-725X

PUBLISHER: Gordon & Breach Science Publishers

DOCUMENT TYPE: Journal

LANGUAGE: English

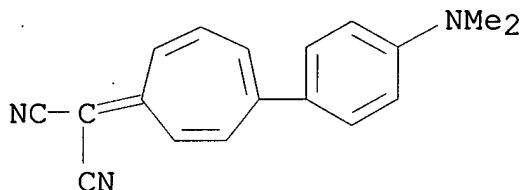
AB Some new 8,8-dicyanoheptafulvene derivs. were synthesized, among which 8,8-dicyano-3-(4'-N,N-dimethylaminophenyl)heptafulvene (1) crystallized in a polar space group of P1 showing NLO characteristics. The mol. is composed of a strong acceptor of the dicyanomethylidene group and a strong donor of the dimethylamino group, both of which are combined with the π -conjugated heptafulvene skeleton. 1 Is typical of an intramol. CT compound, for which high 2nd-order hyperpolarizability is expected. For

this reason, electronic structure was studied in solution and in the solid state from the mol. and crystal structures together with MO calcns. The solid-state spectrum is strikingly different from the solution spectrum because of the extent of conjugation between the 7-membered ring and the Ph ring. There are 2 electronic transitions A (.apprx.450 nm) and B (580-650 nm) in the solid. Band A is due mainly to the 8,8-dicyanoheptafulvene skeleton while band B is of charge-transfer character due to the dicyanomethylidene and dimethylamino groups.

IT **219831-38-6**, 8,8-Dicyano-3-(4'-N,N-dimethylaminophenyl)heptafulvene
(crystal and electronic structure of)

RN 219831-38-6 HCPLUS

CN Propanedinitrile, [4-[4-(dimethylamino)phenyl]-2,4,6-cycloheptatrien-1-ylidene]- (9CI) (CA INDEX NAME)



CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 22, 75

IT **219831-38-6**, 8,8-Dicyano-3-(4'-N,N-dimethylaminophenyl)heptafulvene 219831-39-7
(crystal and electronic structure of)

REFERENCE COUNT: 9 THERE ARE 9 CITED REFERENCES AVAILABLE
FOR THIS RECORD. ALL CITATIONS AVAILABLE
IN THE RE FORMAT

L13 ANSWER 24 OF 31 HCPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1999:3602 HCPLUS

DOCUMENT NUMBER: 130:124765

TITLE: Electronic Characterization of Nonlinear
Optically Active 8,8-Dicyano-3-(4'-N,N-dimethylamino)phenylheptafulvene

AUTHOR(S): Mizuguchi, J.; Suzuki, T.; Matsumoto, S.;
Otani, H.

CORPORATE SOURCE: Department of Applied Physics Faculty of
Engineering, Yokohama National University,

SOURCE: Yokohama, 240-8501, Japan
 Journal of Physical Chemistry B (1999),
 103(3), 426-430

CODEN: JPCBFK; ISSN: 1089-5647

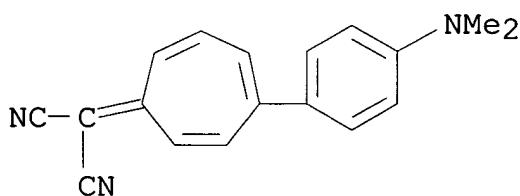
PUBLISHER: American Chemical Society
 DOCUMENT TYPE: Journal
 LANGUAGE: English

AB Some new 8,8-dicyanoheptafulvene derivs. have been synthesized, among which the title compound (1a) is found to crystallize in the polar space group of P1 showing nonlinear optical characteristics. The mol. is composed of a strong acceptor of the dicyanomethylidene group and a strong donor of the dimethylamino group, both of which are combined with the π -conjugated heptafulvene skeleton. Compound 1a is therefore typical of an intramol. charge transfer compound, for which a high second-order hyperpolarizability is expected. For this reason, the electronic structure has been investigated in solution and in the solid state on the basis of the mol. and crystal structures together with MO calcns. The solid-state spectrum is found to be strikingly different from the solution spectrum because of the difference in effective conjugation between the seven-membered ring and Ph ring. There are two electronic transitions A (about 450 nm) and B (580-650 nm) in the solid. Band A is due mainly to the 8,8-dicyanoheptafulvene skeleton, while band B is of charge-transfer character due to the dicyanomethylidene and dimethylamino groups.

IT 219831-38-6P, 8,8-Dicyano-3-(4'-N,N-dimethylamino)phenylheptafulvene
 (preparation, crystallog. and absorption spectra and MO study of dicyano(dimethylamino)phenylheptafulvene)

RN 219831-38-6 HCPLUS

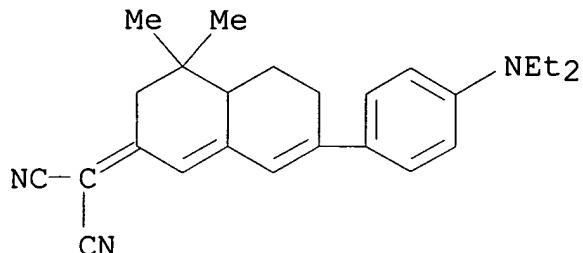
CN Propanedinitrile, [4-[4-(dimethylamino)phenyl]-2,4,6-cycloheptatrien-1-ylidene]- (9CI) (CA INDEX NAME)



CC 22-9 (Physical Organic Chemistry)
 Section cross-reference(s): 75

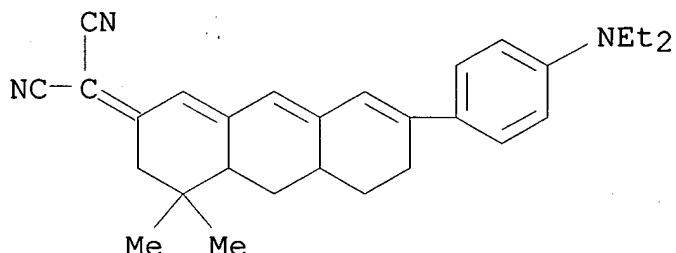
IT **219831-38-6P**, 8,8-Dicyano-3-(4'-N,N-dimethylamino)phenylheptafulvene
(preparation, crystallog. and absorption spectra and MO study of dicyano(dimethylamino)phenylheptafulvene)
REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L13 ANSWER 25 OF 31 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1998:600689 HCAPLUS
DOCUMENT NUMBER: 129:295773
TITLE: Nonlinear optical chromophores with configuration-locked polyenes possessing enhanced thermal stability and chemical stability
AUTHOR(S): Shu, Ching-Fong; Shu, Yuan-Cheng; Gong, Zhi-Hao; Peng, Shie-Ming; Lee, Gene-Hsiang; Jen, Alex K. Y.
CORPORATE SOURCE: Department of Applied Chemistry, National Chiao Tung University, Hsin-Chu, 30035, Taiwan
SOURCE: Chemistry of Materials (1998), 10(11), 3284-3286
CODEN: CMATEX; ISSN: 0897-4756
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Dipolar nonlinear optical chromophores were synthesized with all of the methine groups incorporated into rigidified annulated rings. The configuration-locking approach gave chromophores with enhanced thermal stability for device applications. UV-visible spectra and x-ray crystallog. showed that the rigidity of the annulated rings does not diminish the planarity and the electron delocalization efficiency of the polyenic chain.
IT **213620-04-3P 213620-08-7P**
(UV-visible spectra and x-ray crystallog. of nonlinear optical chromophore, and thermal stability in polyquinoline films)
RN 213620-04-3 HCAPLUS
CN Propanedinitrile, [7-[4-(diethylamino)phenyl]-4,4a,5,6-tetrahydro-4,4-dimethyl-2(3H)-naphthalenylidene]- (9CI) (CA INDEX NAME)



RN 213620-08-7 HCAPLUS

CN Propanedinitrile, [7-[4-(diethylamino)phenyl]-4,4a,5,6,10,10a-hexahydro-4,4-dimethyl-2(3H)-anthracenylidene]- (9CI) (CA INDEX NAME)



CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 22

IT 213620-04-3P 213620-08-7P

(UV-visible spectra and x-ray crystallog. of nonlinear optical chromophore, and thermal stability in polyquinoline films)

REFERENCE COUNT: 25 THERE ARE 25 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L13 ANSWER 26 OF 31 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1998:532407 HCAPLUS

DOCUMENT NUMBER: 129:276433

TITLE: A versatile approach for the synthesis of side-chain aromatic polyquinolines for E-O devices

AUTHOR(S): Ma, Hong; Liu, Sen; Wu, Xiaoming; Wang, Xijun; Jen, Alex K-Y.; Levina, Galina; Staub, Katrin;

Marder, Seth R.

CORPORATE SOURCE: Dep. Chem., Northeastern Univ., Boston, MA, 02115, USA

SOURCE: Polymer Preprints (American Chemical Society, Division of Polymer Chemistry) (1998), 39(2), 1109-1110

CODEN: ACPPAY; ISSN: 0032-3934

PUBLISHER: American Chemical Society, Division of Polymer Chemistry

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Polyquinolines containing p-methoxyphenyl side chains were prepared and

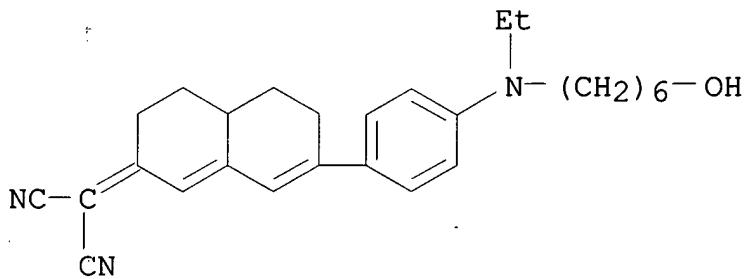
hydrolyzed to give p-hydroxyphenyl side chains. The hydroxy groups were reacted with hydroxy-containing chromophores to give polyquinolines having nonlinear optical properties.

IT **208345-48-6DP**, reaction products with hydroxyphenyl-containing polyquinolines

(preparation of polyquinolines having aromatic side chains and nonlinear optical properties)

RN 208345-48-6 HCPLUS

CN Propanedinitrile, [7-[4-[ethyl(6-hydroxyhexyl)amino]phenyl]-4,4a,5,6-tetrahydro-2(3H)-naphthalenylidene]- (9CI) (CA INDEX NAME)



CC 35-5 (Chemistry of Synthetic High Polymers)

IT 2872-52-8DP, reaction products with hydroxyphenyl-containing polyquinolines 208345-47-5DP, hydrolyzed, reaction products with hydroxy-containing chromophores **208345-48-6DP**, reaction products with hydroxyphenyl-containing polyquinolines 208345-50-0DP, hydrolyzed, reaction products with hydroxy-containing chromophores 208345-51-1DP, hydrolyzed, reaction products with hydroxy-containing chromophores 213739-64-1DP, reaction products with hydroxyphenyl-containing polyquinolines 213739-65-2P

(preparation of polyquinolines having aromatic side chains and nonlinear optical properties)

REFERENCE COUNT: 28 THERE ARE 28 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L13 ANSWER 27 OF 31 HCPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1998:338500 HCPLUS

DOCUMENT NUMBER: 129:41482

TITLE: Versatile Synthetic Approach to Nonlinear Optical Side-Chain Aromatic Polyquinolines with Large Second-Order Nonlinearity and Thermal Stability

AUTHOR(S): Ma, Hong; Wang, Xijun; Wu, Xiaoming; Liu, Sen; Jen, Alex K-Y.

CORPORATE SOURCE: Department of Chemistry, Northeastern University, Boston, MA, 02115, USA

SOURCE: Macromolecules (1998), 31(12), 4049-4052

CODEN: MAMOBX; ISSN: 0024-9297

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

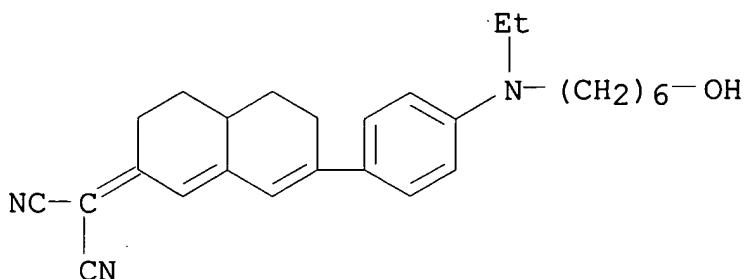
AB A versatile synthesis of NLO side-chain aromatic polyquinolines is based on hydrolysis of a methoxy-containing polyquinoline, followed by covalent bonding of a chromophore onto the pendent Ph moieties of the polyquinoline via the Mitsunobu reaction. By locating the hydroxyl group on the pendent Ph side group instead of on the polyquinoline backbone, a higher efficiency of chromophore attachment is achieved. A Ph spacer between the polymer backbone and the NLO chromophore facilitates high elec. field poling of the NLO polyquinoline, compared to polyquinolines with chromophores directly attached on the polymer backbone.

IT 208345-48-6DP, reaction products with hydroxyl-polyquinolines

(preparation of nonlinear optical side-chain aromatic polyquinolines with large second-order nonlinearity and thermal stability)

RN 208345-48-6 HCPLUS

CN Propanedinitrile, [7-[4-[ethyl(6-hydroxyhexyl)amino]phenyl]-4,4a,5,6-tetrahydro-2(3H)-naphthalenylidene]- (9CI) (CA INDEX NAME)



CC 35-8 (Chemistry of Synthetic High Polymers)
 Section cross-reference(s): 36, 73

IT 2872-52-8DP, reaction products with hydroxyl-polyquinolines
 190715-21-0DP, reaction products with hydroxyl-polyquinolines
 208345-47-5DP, demethoxylated, Mitsunobu reaction products with
 chromophores **208345-48-6DP**, reaction products with
 hydroxyl-polyquinolines 208345-49-7DP, reaction products with
 hydroxyl-polyquinolines 208345-50-0DP, demethoxylated, Mitsunobu
 reaction products with chromophores 208345-51-1DP,
 demethoxylated, Mitsunobu reaction products with chromophores
 (preparation of nonlinear optical side-chain aromatic

polyquinolines

with large second-order nonlinearity and thermal stability)

REFERENCE COUNT: 27 THERE ARE 27 CITED REFERENCES AVAILABLE
 FOR THIS RECORD. ALL CITATIONS AVAILABLE
 IN THE RE FORMAT

L13 ANSWER 28 OF 31 HCPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1992:436593 HCPLUS

DOCUMENT NUMBER: 117:36593

TITLE: Cycloheptadienyl bisazo pigment-containing
 electrophotoconductor, electrophotographic
 device, and facsimile using same

INVENTOR(S): Go, Nobuaki; Kikuchi, Norihiro; Maruyama, Akio
 PATENT ASSIGNEE(S): Canon K. K., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 12 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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USHA SHRESTHA REM 4B28

JP 04027955

A2 19920130

JP 1990-132673

1990
0524

PRIORITY APPLN. INFO.:

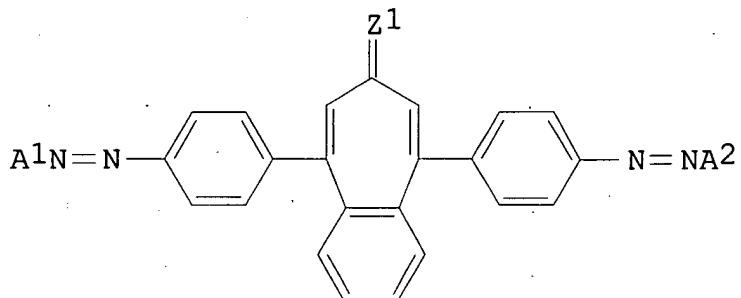
JP 1990-132673

1990
0524

OTHER SOURCE(S):

MARPAT 117:36593

GI



I

AB Claims are (1) an electrophotog. photoconductor having a photosensitive layer containing a bisazo pigment I ($Z1 = O, S$, dicyanomethylene; A1-2 = coupler residue containing phenolic OH) on an elec. conductive support, (2) an electrophotog. device using the photoconductor, and (3) a facsimile having the device and a receptor for image from remote terminal. The photoconductor, e.g., a combination of I ($Z1 = O, A1-2 = Naphthol AS$ residue) and a styryl hydrazone charge-transfer agent, is useful for repeating use.

IT 142200-05-3 142232-83-5 142232-88-0

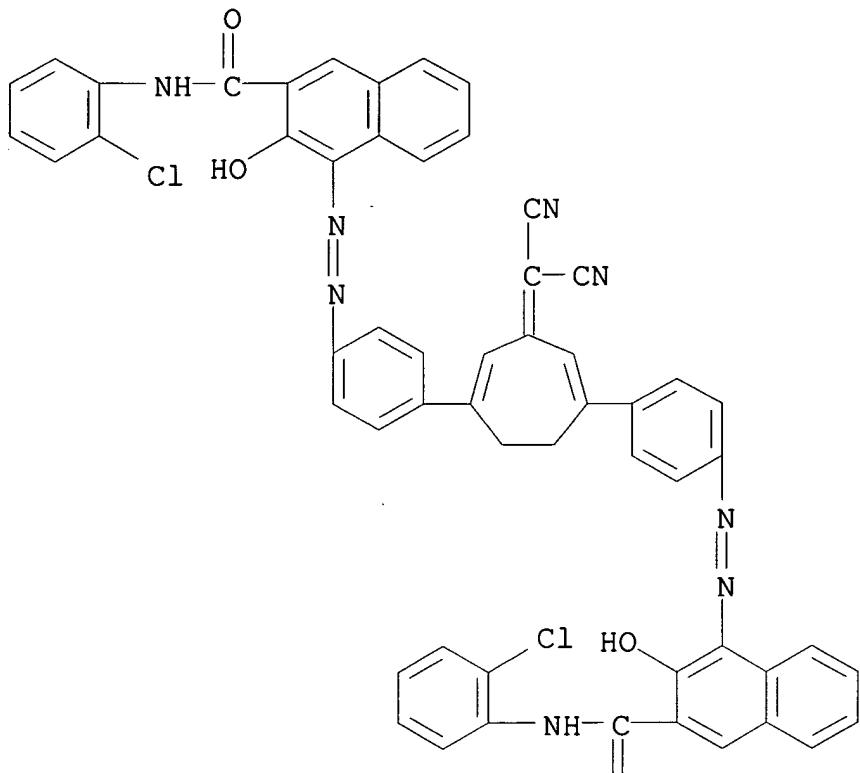
142245-05-4

(Preparation of, charge-generating agent, for electrophotographic photoconductor, for facsimile)

RN 142200-05-3 HCAPLUS

CN 2-Naphthalenecarboxamide, 4,4'-[[6-(dicyanomethylene)-4,7-cycloheptadiene-1,4-diyl]bis(4,1-phenyleneazo)]bis[N-(2-chlorophenyl)-3-hydroxy- (9CI) (CA INDEX NAME)

PAGE 1-A



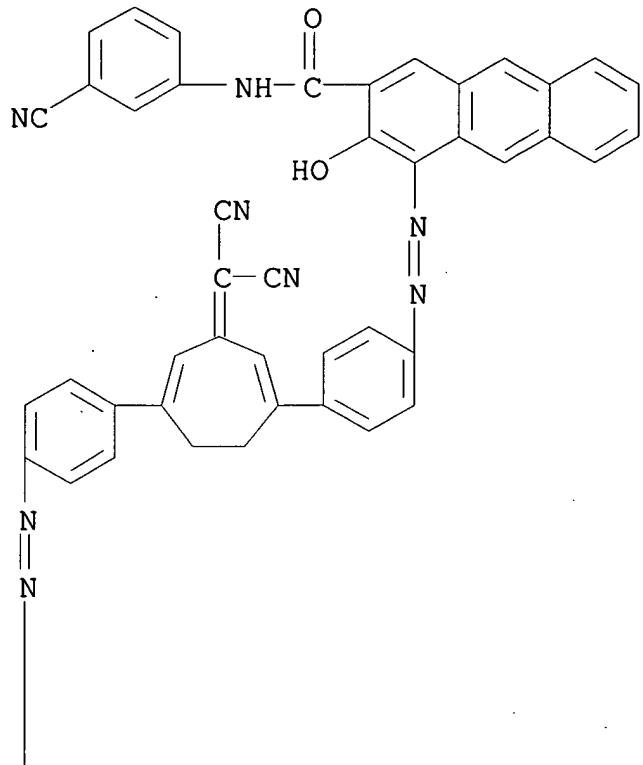
PAGE 2-A



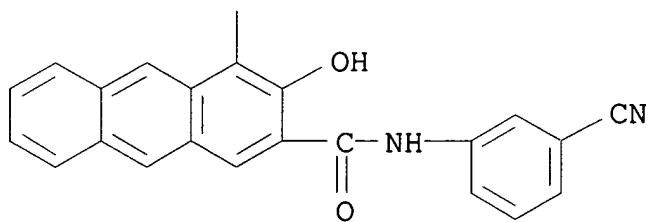
RN 142232-83-5 HCAPLUS

CN 2-Antracenecarboxamide, 4,4'-[[6-(dicyanomethylene)-4,7-cycloheptadiene-1,4-diyl]bis(4,1-phenyleneazo)]bis[N-(3-cyanophenyl)-3-hydroxy- (9CI) (CA INDEX NAME)

PAGE 1-A



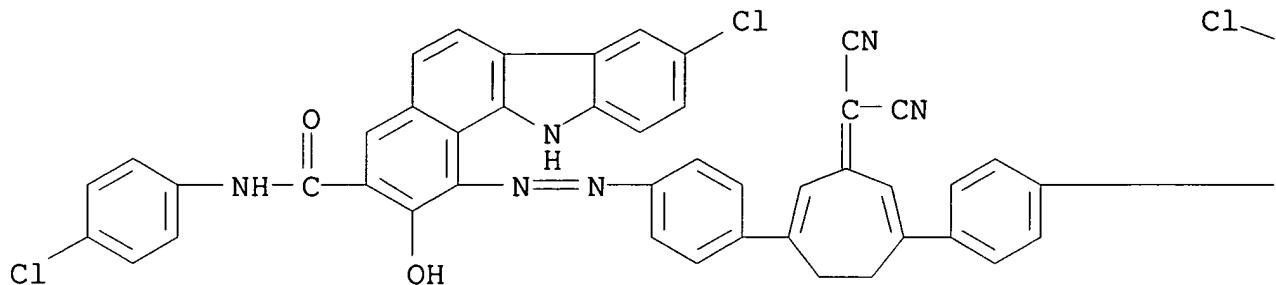
PAGE 2-A



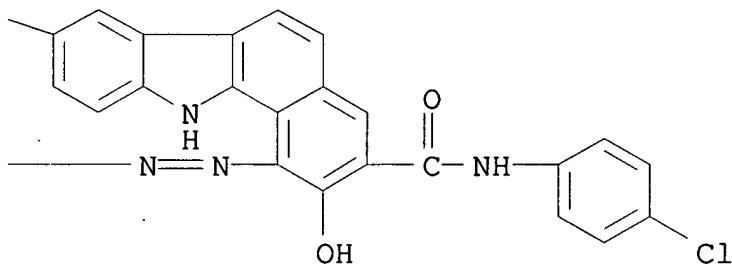
RN 142232-88-0 HCAPLUS

CN 11H-Benzo[a]carbazole-3-carboxamide, 1,1'--[[6-(dicyanomethylene)-4,7-cycloheptadiene-1,4-diyl]bis(4,1-phenyleneazo)]bis[8-chloro-N-(4-chlorophenyl)-2-hydroxy- (9CI) (CA INDEX NAME)

PAGE 1-A



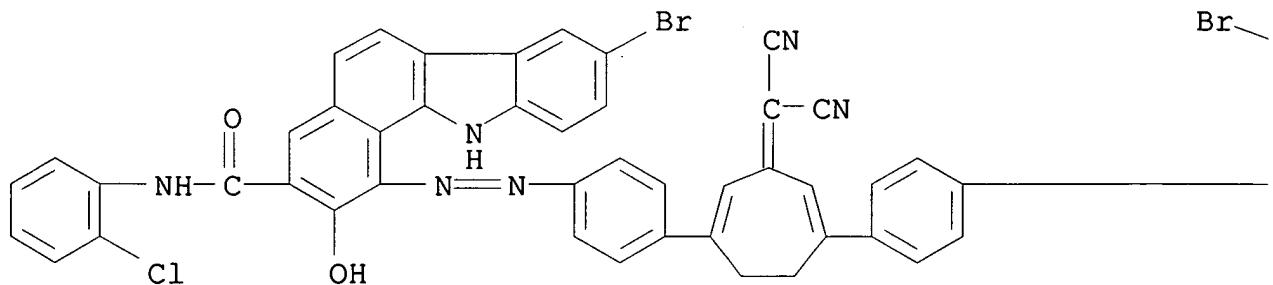
PAGE 1-B



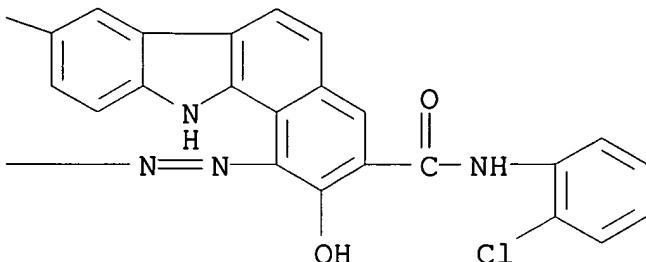
RN 142245-05-4 HCPLUS

CN 11H-Benzo[a]carbazole-3-carboxamide, 1,1'-[[6-(dicyanomethylene)-4,7-cycloheptadiene-1,4-diyl]bis(4,1-phenyleneazo)]bis[8-bromo-N-(2-chlorophenyl)-2-hydroxy- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B



IC ICM G03G005-06

ICS G03G005-06; H04N001-29

CC 74-3 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

IT	142199-99-3	142200-00-8	142200-01-9	142200-02-0
	142200-03-1	142200-04-2	142200-05-3	142200-06-4
	142200-07-5	142200-08-6	142200-09-7	142200-10-0
	142200-11-1	142213-46-5	142213-47-6	142216-33-9
	142216-34-0	142216-35-1	142216-36-2	142216-37-3
	142216-38-4	142216-39-5	142216-40-8	142216-41-9
	142216-42-0	142216-43-1	142216-44-2	142216-45-3
	142216-46-4	142216-47-5	142232-83-5	142232-84-6
	142232-85-7	142232-86-8	142232-87-9	142232-88-0
	142245-05-4	142245-06-5	142245-07-6	

(Preparation of, charge-generating agent, for electrophotog. photoconductor, for facsimile)

L13 ANSWER 29 OF 31 HCPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1988:152135 HCPLUS

DOCUMENT NUMBER: 108:152135

TITLE: Syntheses with nitrile. LXXVI.

Aminopentafulvene-6,6-dicarbonitrile dyes with near-infrared absorption

AUTHOR(S): Junek, Hans; Uray, Georg; Zuschnig, Gerhard

CORPORATE SOURCE: Inst. Org. Chem., Karl-Franzens Univ. Graz, Graz, A-8010, Austria

SOURCE: Dyes and Pigments (1988), 9(2), 137-52

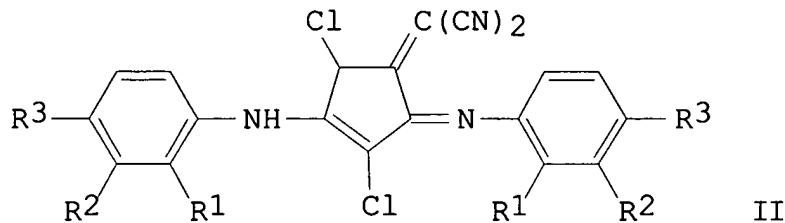
CODEN: DYPIDX; ISSN: 0143-7208

DOCUMENT TYPE: Journal

LANGUAGE: German

OTHER SOURCE(S): CASREACT 108:152135

GI



AB 1,2,3,4-Tetrachloro-6,6-dicyanofulvene (I) reacted readily with substituted primary anilines, except 2,6-dialkylanilines, to give yellow to orange 2,5-dichloro-4-dicyanomethylene-1-phenylimino-3-phenylamino-1-cyclopentenes (II; R1 = H, Me, OMe, iso-Pr; R2 = H, Cl; R3 = H, Me, OMe, Cl, Br). Reaction of secondary anilines with I afforded deeply colored 3-[N-phenyl-N-methyl(or cyanoethyl)amino]-1,2,4-trichloropentafulvene-6,6-dicarbonitriles having $\lambda_{\text{max}} = 610-650$ nm. N,N-Dialkylanilines and sterically hindered primary anilines reacted with I at the p-position yielding polymethines having $\lambda_{\text{max}} \leq 780$ nm.

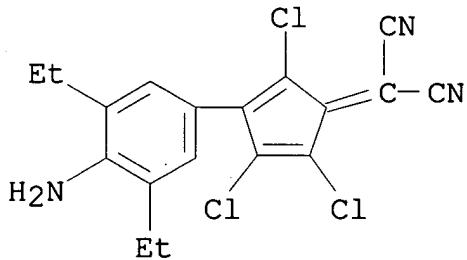
IT **113734-45-5P 113734-46-6P 113734-47-7P**

113734-48-8P 113734-49-9P

(preparation and absorption spectra of)

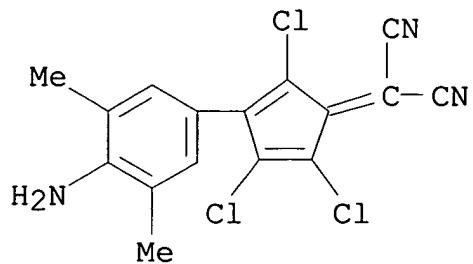
RN 113734-45-5 HCPLUS

CN Propanedinitrile, [3-(4-amino-3,5-diethylphenyl)-2,4,5-trichloro-2,4-cyclopentadien-1-ylidene]- (9CI) (CA INDEX NAME)



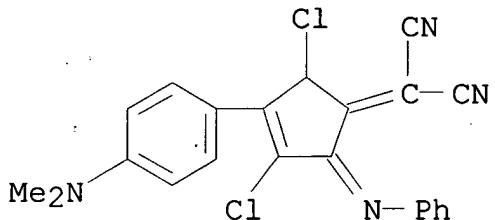
RN 113734-46-6 HCPLUS

CN Propanedinitrile, [3-(4-amino-3,5-dimethylphenyl)-2,4,5-trichloro-2,4-cyclopentadien-1-ylidene]- (9CI) (CA INDEX NAME)



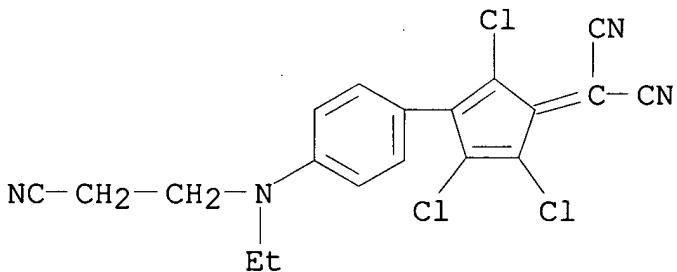
RN 113734-47-7 HCAPLUS

CN Propanedinitrile, [2,4-dichloro-3-[4-(dimethylamino)phenyl]-5-(phenylimino)-3-cyclopenten-1-ylidene]- (9CI) (CA INDEX NAME)



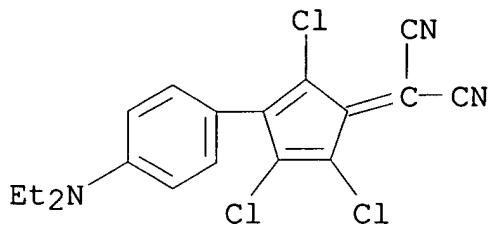
RN 113734-48-8 HCAPLUS

CN Propanedinitrile, [2,3,5-trichloro-4-[4-[(2-cyanoethyl)ethylamino]phenyl]-2,4-cyclopentadien-1-ylidene]- (9CI) (CA INDEX NAME)



RN 113734-49-9 HCAPLUS

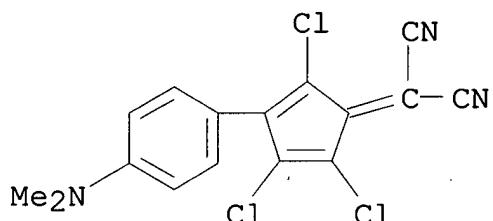
CN Propanedinitrile, [2,3,5-trichloro-4-[4-(diethylamino)phenyl]-2,4-cyclopentadien-1-ylidene]- (9CI) (CA INDEX NAME)

IT **113734-43-3P**

(preparation and condensation with aniline)

RN 113734-43-3 HCPLUS

CN Propanedinitrile, [2,3,5-trichloro-4-[4-(dimethylamino)phenyl]-2,4-cyclopentadien-1-ylidene]- (9CI) (CA INDEX NAME)



CC 41-11 (Dyes, Organic Pigments, Fluorescent Brighteners, and Photographic Sensitizers)

IT **113734-45-5P 113734-46-6P 113734-47-7P****113734-48-8P 113734-49-9P 113734-50-2P**

113734-51-3P 113734-52-4P 113734-53-5P 113734-54-6P

113734-55-7P 113734-56-8P 113734-57-9P 113734-58-0P

113734-59-1P 113734-60-4P 113734-61-5P 113734-62-6P

113734-63-7P 113734-64-8P 113734-65-9P

(preparation and absorption spectra of)

IT **113734-43-3P 113734-44-4P**

(preparation and condensation with aniline)

L13 ANSWER 30 OF 31 HCPLUS COPYRIGHT 2005 ACS on STN

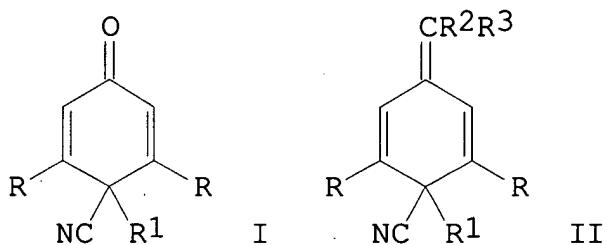
ACCESSION NUMBER: 1987:101770 HCPLUS

DOCUMENT NUMBER: 106:101770

TITLE: 1,4-Pentadien-3-ones. XXVI. Syntheses of s-trans/s-trans fixed 1,4-pentadien-3-ones and their reactions with active methylene compounds

AUTHOR(S): Kuehn, Reimund; Otto, Hans Hartwig

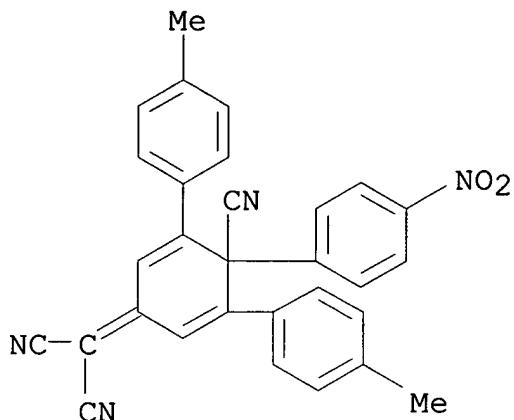
CORPORATE SOURCE: Pharm. Inst., Univ. Freiburg, Freiburg,
D-7800, Fed. Rep. Ger.
SOURCE: Archiv der Pharmazie (Weinheim, Germany)
(1986), 319(10), 898-910
CODEN: ARPMA5; ISSN: 0365-6233
DOCUMENT TYPE: Journal
LANGUAGE: German
OTHER SOURCE(S): CASREACT 106:101770
GI



AB Cyclohexadienones I (R, R1 = Ph or substituted phenyl) (title compds.) were prepared from the corresponding cyclohexanones by bromination-dehydrobromination. 4,4-Dimethyl-2-cyclohexen-1-one and 4-cyano-4-phenylcyclohexanone react somewhat differently. I underwent condensation reactions with malonic acid derivs. to afford cross-conjugated systems II (R2 = CN, R3 = CN, CO₂Me, CONH₂; R2 = R3 = CO₂Me).

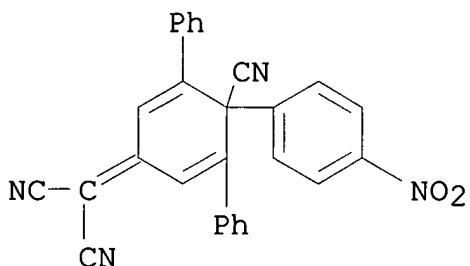
IT 106920-61-0P 106920-62-1P
(preparation and spectra of)

RN 106920-61-0 HCPLUS
CN Propanedinitrile, [4-cyano-3,5-bis(4-methylphenyl)-4-(4-nitrophenyl)-2,5-cyclohexadien-1-ylidene]- (9CI) (CA INDEX NAME)



RN 106920-62-1 HCAPLUS

CN Propanedinitrile, [4-cyano-4-(4-nitrophenyl)-3,5-diphenyl-2,5-cyclohexadien-1-ylidene]- (9CI) (CA INDEX NAME)



CC 24-5 (Alicyclic Compounds)

IT 84227-89-4P 84227-90-7P 84227-91-8P 84227-92-9P

84227-93-0P **106920-61-0P 106920-62-1P**

106920-63-2P 106920-64-3P 106920-65-4P 106920-66-5P

106920-67-6P 106932-86-9P

(preparation and spectra of)

L13 ANSWER 31 OF 31 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1971:76204 HCAPLUS

DOCUMENT NUMBER: 74:76204

TITLE: Reactions of some 1,3-indandione derivatives

AUTHOR(S): Irick, Gether, Jr.

CORPORATE SOURCE: Res. Lab., Tennessee Eastman Co., Kingsport, TN, USA

SOURCE: Journal of Chemical and Engineering Data

(1971), 16(1), 118-21
 CODEN: JCEAAZ; ISSN: 0021-9568

DOCUMENT TYPE: Journal
 LANGUAGE: English

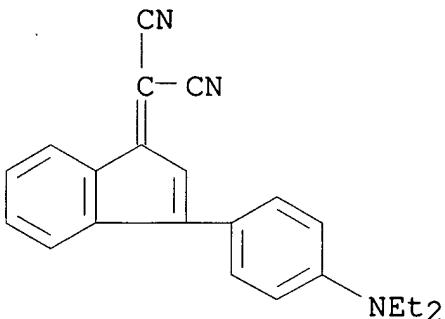
AB Derivs. of 1,3-indandione having a carbonyl O replaced by a strong electron-withdrawing group (1,3-dioxo-2-indanylidene or dicyanomethylene) were converted to chlorobenzofulvenes by reaction with POCl_3 . The halogens of these chlorobenzofulvenes were displaced by various nucleophiles to produce colored products. Red to blue methine dyes were obtained by condensation of the methylene groups in the derivs. of 1,3-indandione with aromatic aldehydes. Visible spectra of the colored products showed that the 1,3-dioxo-2-indanylidene group was a better electron acceptor than dicyanomethylene group.

IT **30508-04-4P 31201-24-8P**

(preparation of)

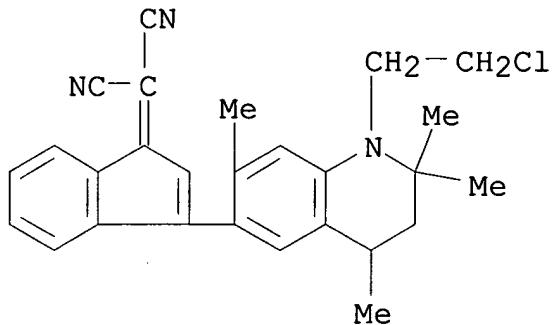
RN 30508-04-4 HCPLUS

CN Indene- $\Delta 1, \alpha$ -malononitrile, 3-[p-(diethylamino)phenyl]-
 (8CI) (CA INDEX NAME)



RN 31201-24-8 HCPLUS

CN Indene- $\Delta 1, \alpha$ -malononitrile, 3-[1-(2-chloroethyl)-
 1,2,3,4-tetrahydro-2,2,4,7-tetramethyl-6-quinolyl]- (8CI) (CA
 INDEX NAME)



CC 26 (Condensed Aromatic Compounds)
 IT 805-54-9P 1080-74-6P 1707-95-5P 2826-28-0P 21889-13-4P
 30507-89-2P 30507-90-5P 30507-91-6P 30507-92-7P
 30507-93-8P 30507-94-9P 30507-95-0P 30507-96-1P
 30507-97-2P 30507-99-4P **30508-04-4P** 30513-53-2P
 30513-54-3P 30513-55-4P 30513-56-5P 30513-57-6P
 30513-58-7P 30653-79-3P 30653-80-6P 31201-23-7P
31201-24-8P
 (preparation of)